



UNIVERSITI TEKNOLOGI MARA

BCT598: NANO-COMPOSITE TECHNOLOGY

Course Name (English)	NANO-COMPOSITE TECHNOLOGY APPROVED
Course Code	BCT598
MQF Credit	3
Course Description	The field of nanocomposites involves the study of multiphase material where at least one of the constituent phases has one dimension less than 100nm. The promise of nanocomposites lies in their multifunctionality, the possibility of realizing unique combinations of properties unachievable with traditional materials.
Transferable Skills	Nano technology based knowledge and expertise
Teaching Methodologies	Lectures, Blended Learning, Discussion
CLO	CLO1 State the definition, description and classification of nanocomposites CLO2 Describe the processing technique of nanomaterials CLO3 Examine and analyze the mechanical, physical, barrier and thermal behavior of bio-based nanocomposites
Pre-Requisite Courses	No course recommendations
Topics	
1. 1.0 Introduction 1.1) 1.1 Nanocomposites science & technology 1.2) 1.2 Classifications nanocomposites	
2. 2.0 Nanofillers 2.1) 2.1 Introduction to nanoscale fillers 2.2) 2.2 Nanofiber/nanocellulose 2.3) 2.3 Carbon nanotubes 2.4) 2.4 Plate-like nanofillers 2.5) 2.5 Inorganic fillers	
3. 3.0 Processing of polymer nanocomposites 3.1) 3.1 Nanotube/polymer composites 3.2) 3.2 Layered filler/polymer composites 3.3) 3.3 Nanoparticle/polymer composites	
4. 4.0 Layered silicate-polymer intercalation compounds 4.1) 4.1 Layered polysilicate 4.2) 4.2 Kaolinite 4.3) 4.3 Layered double hydroxide 4.4) 4.4 Role of polymer in interlayers	
5. 5.0 Nanocomposite properties 5.1) 5.1 Mechanical properties 5.2) 5.2 Physical properties 5.3) 5.3 Morphological observation 5.4) 5.4 Thermal behaviour 5.5) 5.5 Barrier properties	
6. 6.0 Bio-based nanocomposites 6.1) 6.1 Biologically synthesized nanoparticle & nanostructures 6.2) 6.2 Biologically derived synthetic nanocomposites 6.3) 6.3 Protein-based nanostructure formation	
7. 7.0 New technologies & inventions in nanocomposites 7.1) 7.1 Global interest	

Assessment Breakdown	%
Continuous Assessment	60.00%
Final Assessment	40.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Presentation	Online presentation	20%	CLO2
	Quiz	Quiz	10%	CLO1
	Test	Test	30%	CLO2

Reading List	Reference Book Resources	<ul style="list-style-type: none"> • Pinnavaia T. J & Beall G. W 2001, <i>Polymer-clay nanocomposites</i>, John Wiley & Sons England • Charles P. Poole Jr & Frank J. Owens 2003, <i>Introduction to nanotechnology</i>, John Wiley & Sons New Jersey • Ajayan P. M, Schadler L. S & Braun P. V 2004, <i>Nanocomposite science and technology</i>, 2004 Ed., John Wiley & Sons Weinheim
Article/Paper List	This Course does not have any article/paper resources	
Other References	This Course does not have any other resources	