



UNIVERSITI TEKNOLOGI MARA
CID670: ADVANCED CERAMIC DESIGN FOR MANUFACTURING

Course Name (English)	ADVANCED CERAMIC DESIGN FOR MANUFACTURING APPROVED
Course Code	CID670
MQF Credit	2
Course Description	This subject will be discussing the introductory to co-relation between ceramic as material in providing solutions for engineering conditions with specialist requirements (Advanced Ceramic). The thermal stability, wear-resistance and resistance to corrosion of ceramic components make the application of ceramic an ideal choice for many industrial uses. Ceramic components able to provide considerable lifetime increases compare to conventional metal components. The application of ceramics may not always the be an optimum design solution or choice, but frequently, advanced ceramics can be used as direct replacements for existing designs, providing optimum performance combined with cost effectiveness.
Transferable Skills	Industrial Ceramic manufacturing processes
Teaching Methodologies	Lectures, Blended Learning, Field Trip, Tutorial
CLO	CLO1 Breakdown the elements of advance ceramic design for the industry CLO2 Propose various types of Industrial Ceramic material preparation for manufacturing. CLO3 Reporting progressive industrial ceramic process flow for manufacturing.
Pre-Requisite Courses	No course recommendations
Topics	
1. INTRODUCTION 1.1) 1.Program Brief 1.2) 2.Course Brief	
2. INTRODUCTION TO ADVANCED CERAMIC 2.1) 1.Definition and terminology 2.2) 2.Scenario	
3. ADVANCED CERAMIC - APPLICATION I 3.1) 1.Introduction 3.2) 2.General Engineering 3.3) 3.Chemical Process 3.4) 4.Electronics & Insulator	
4. ADVANCED CERAMIC - APPLICATION II 4.1) 1.Refractories 4.2) 2.Bio ceramics 4.3) 3.Case study - Assignment 1	
5. ADVANCED CERAMIC - PROPERTIES I 5.1) 1.Fractural Toughness 5.2) 2.Flexural Strength 5.3) 3.Corrosion resistance 5.4) 4.Case study Assignment 2	
6. ADVANCED CERAMIC - PROPERTIES II 6.1) 1.Thermal Properties 6.2) 2.Hardness 6.3) 3.Wear behavior 6.4) 4.Case Study Assignment 3	

Assessment Breakdown	%
Continuous Assessment	100.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Provide presentation of processes involving Ceramic material preparation for manufacturing through methodology impact in new product development	30%	CLO2
	Individual Project	Project assignment in related to advance ceramic product (R&D) improvement that require student to gain knowledge to emphasize the attribute of 'knowledge' in MQF 1 LOD.	40%	CLO1
	Written Report	Presenting current issues in national and global manufacturing processes trend towards individual and society and presented through 'oral communication' and 'writing communication' in MQF 7 LOD.	30%	CLO3

Reading List	Recommended Text	<ul style="list-style-type: none"> • David Richerson, <i>Modern Ceramic Engineering: Properties, Processing, and Use in Design, Third Edition</i>, CRC [ISBN: 9781574446937] • Chris Lefteri, <i>Ceramics: Materials for Inspirational Design, Rotovision</i> [ISBN: 9782880466688] • Shigeyuki Somiya 2013, <i>Handbook of Advanced Ceramics: Materials, Applications, Processing, and Properties</i>, Academic Press [ISBN: 9780123854704]
	Reference Book Resources	<ul style="list-style-type: none"> • A. K. Chitale, R. C. Gupta 2011, <i>Product Design and Manufacturing</i>, PHI Learning Pvt. Ltd [ISBN: 9788120342828]
Article/Paper List	This Course does not have any article/paper resources	
Other References	This Course does not have any other resources	