



UNIVERSITI TEKNOLOGI MARA

CID410: CERAMIC PRODUCTION TECHNOLOGY

Course Name (English)	CERAMIC PRODUCTION TECHNOLOGY APPROVED
Course Code	CID410
MQF Credit	2
Course Description	This course will cover the basic knowledge of ceramic materials and manufacturing. It begins with two major processes, which are beneficiary and manufacturing. The beneficiary process will cover the origin of ceramic materials while the manufacturing process will discuss the basic and advanced production of ceramics. The design will be part of manufacturing main process. Hence, the role of ceramics designer in the manufacturing process is crucial to produce the best yet the most cost effective products.
Transferable Skills	Basic materials testing and fabrication for ceramics production
Teaching Methodologies	Lectures, Blended Learning, Demonstrations
CLO	CLO1 Acquiring basic knowledge on ceramic raw materials origin and properties. CLO2 Acquiring good knowledge about ceramics processing ability and applications. CLO3 Grasping in-depth knowledge on ceramic materials and processes related to art and design with the aid of technology.
Pre-Requisite Courses	No course recommendations
Topics	
1. Introduction to ceramics as materials 1.1) Explanations of various material groups 1.2) Ceramics definitions and categories	
2. Introduction to ceramics as materials (cont.) 2.1) Ceramics definitions and categories 2.2) Ceramics in art and design	
3. Ceramic process in manufacturing scales 3.1) Beneficiation process of raw materials 3.2) • Introduction to basic geology and mineralogy (igneous, sedimentary 3.3) and metamorphic rocks) 3.4) • Types of ceramic raw materials such as clays, fluxes and fillers	
4. Ceramic process in manufacturing scales (cont.) 4.1) Ceramic fabrications to final products 4.2) • Design, forming, drying, firing (bisque and glazed) 4.3) • Basic packaging	
5. Ceramic materials properties 5.1) Physical and mechanical properties 5.2) • Strength, hardness, plasticity, density, viscosity, shrinkage	
6. Ceramic materials properties (cont.) 6.1) Optical properties	
7. Ceramic bodies formulations. 7.1) Types of ceramics body. 7.2) • Stoneware, earthenware, stoneware and porcelain.	
8. Ceramic bodies formulations (cont.) 8.1) Types of ceramics body 8.2) • Stoneware, earthenware, stoneware and porcelain	

<p>9. Ceramic fabrications 9.1) Wet methods 9.2) • Slip castings, plastic forming and extrusion</p>
<p>10. Ceramic fabrications (cont.) 10.1) Dry methods 10.2) • Ram process, injection moulding and hot iso-static pressing</p>
<p>11. Testing and analysis. 11.1) Slip and plastic clay 11.2) • Viscosity, specific gravity/density 11.3) • Percentage of shrinkage 11.4) Effect of binder type and amount on the green strength</p>
<p>12. Testing and analysis (cont.) 12.1) Effect of additives on the rheological properties of oxide ceramic slurries 12.2) Effect of milling time on the surface area and phase transformation of ceramic materials 12.3) Determination of particle size and particle size distribution</p>
<p>13. Introduction to glazing and firing 13.1) Types and temperature for glazing 13.2) Fuel, temperature and kiln</p>
<p>14. Introduction to glazing and firing (cont.) 14.1) Types and temperature for glazing 14.2) Fuel, temperature and kiln</p>

Assessment Breakdown	%
Continuous Assessment	60.00%
Final Assessment	40.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Individual Assignment	15%	CLO1
	Assignment	Testing Report 1	15%	CLO2 , CLO3
	Assignment	Group Assignment	15%	CLO1 , CLO2
	Individual Project	Testing Report 2	15%	CLO3

Reading List	Recommended Text
	Allen Dinsdale 1993, <i>Pottery science: materials, process(es), and</i> , E. Horwood . Halsted Press Chichester

Article/Paper List
This Course does not have any article/paper resources

Other References
This Course does not have any other resources