**UNIVERSITI TEKNOLOGI MARA**

**CID602: INDUSTRIAL CERAMIC R&D PHASE**

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| **Course Name (English)** | INDUSTRIAL CERAMIC R&D PHASE APPROVED |
| **Course Code** | CID602 |
| **MQF Credit** | 3 |
| **Course Description** | This course will be introducing an aspect of students' preparation before diving into the final decision of fabricating the final product in conjunction with the final project. In regards, the student will be equipped with the understanding of the importance of conducting research and development in product development. Hence, the disciplinary introduction of this course will demonstrate the understanding of multi-departmental aspect as preferences that is needed to prepare the student to beforehand the planning of design that concern the activity of Design Outcome Identification and Assessment, Design Scenario, Product Research and Development, Product Performances and Assessment. As a design-oriented academic field that is interdisciplinary in nature: the variety of disciplines, 'Industrial Ceramic Research and Development Phase' provides an extension for the student to benefit this period in focusing an in-depth study to their planning before diving in into their final project product fabrication. Industrial Ceramic Research and Development Phase' process goes through the same steps in New Product Development, however as this is an extension study to project that has not been developed yet by the student before, new risks and uncertainties are collected and studied. Through this introductory approach students able will gain a bigger view on the needs of the industrial nature while preparing the alignment of their knowledge to the outside world. |
| **Transferable Skills** | Research |
| **Teaching Methodologies** | Lectures, Studio, Inquiry-based Learning, Case Study, Discussion, Presentation, Peer Practice |
| **CLO** | CLO1 Initiates component concept mapping of product development which are align to the industrial specification of product improvement and development<br>CLO2 Proposes various types of industrial ceramic technical identification and solution methodology in regard to the needs of New Product Development through individual and group task project<br>CLO3 Report an understanding as a project and technical leader in handling individual and grouping project (Affective 3) (LOD8) |
| **Pre-Requisite Courses** | No course recommendations |

| **Topics** |
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| **1. Introduction to 5 Steps in New Product Development (NPD)**<br>1.1) 1.Definition<br>1.2) 2.Terminology<br>1.3) 3.5 Steps in NPD Cycle |
| **2. Introduction to Problem Based Learning (PBL)**<br>2.1) 1.Definition<br>2.2) 2.Terminology<br>2.3) 3.6 Steps in PBL |
| **3. Physical vs. Virtual Product**<br>3.1) 1.Definition<br>3.2) 2.Terminology<br>3.3) 3.Ergonomics in Industrial Ceramic Design |
| **4. Design Association - User Experience (UX) vs. User Centred Design (UCD)**<br>4.1) N/A |

**5. Design Awareness**
5.1) 1.Face to Face Interaction
5.2) 2.Mediated Interaction
5.3) 3.Visual Cues (Mainstream Product)

| Assessment Breakdown | % |
|---|---|
| Continuous Assessment | 100.00% |

**Details of Continuous Assessment**

| Assessment Type | Assessment Description | % of Total Mark | CLO |
|---|---|---|---|
| Assignment | Product Presentation and Report | 60% | CLO3 |
| Case Study | Design based study 1 - Tangible design feature (Product development) | 20% | CLO1 |
| Discussion | Design based study 2 - Tangible design feature (Product development/ Methodology) | 20% | CLO2 |

**Reading List**

**Recommended Text**

- **Bruce Hanington 2012, *Bella Martin Universal Methods of Design:?100 Ways to Research Complex Problems, Develop Innovative Ideas, and Design Effective Solutions.*, Rockport Publishers**
- **Vijay Kumar 2012, *101 Design Methods: A Structured Approach for Driving Innovation in Your Organization*, John Wiley & Sons New Jersey**

**Article/Paper List**

**Recommended Article/Paper Resources**

- **Clare Onyon 2012, Problem-based learning: A review of the educational and psychological theory, *The Clinical Teacher*, 9, 22 https://doi.org/10.1111/j.1743-498X.2011.00501.x**

**Other References**

This Course does not have any other resources