



**UNIVERSITI TEKNOLOGI MARA**

**IDE510: ADVANCED INDUSTRIAL DESIGN FOR MANUFACTURING**

<b>Course Name (English)</b>	ADVANCED INDUSTRIAL DESIGN FOR MANUFACTURING <b>APPROVED</b>
<b>Course Code</b>	IDE510
<b>MQF Credit</b>	3
<b>Course Description</b>	This course allows for integration of design and manufacturing strategy in line with pre-assigned case studies to stimulate a design for production planning process. The step by step approach to various analytical skills will guide students through design stages until the manufacturability aspects. The full spectrum of New Product Development (NPD) has shared the sub topic towards designing a new concept of design in manufacturing. The software used will bring out toward DFM in advance which followed by industrial requirement. This course also provides students the platform through entire motions that are similar to an actual industrial design project and manufacturing in advance mode.
<b>Transferable Skills</b>	Computer Aided Skill, Advance Design For Manufacturing Strategy, Design for Production Planning Process, New Product Introduction/ Development Process
<b>Teaching Methodologies</b>	Lectures, Blended Learning, Lab Work, Studio, Demonstrations, Case Study, Problem Based Learning (PBL), Discussion, Presentation, Workshop, Computer Aided Learning, Supervision, Industrial Talk
<b>CLO</b>	<p>CLO1 Demonstrate confidence in overall engineering design process with a manufacturing point of view.</p> <p>CLO2 Report on independent view on fundamental and background of conventional and advanced method in DFM.</p> <p>CLO3 Evaluate application of manufacturing process consideration in 2D and 3D product representation through design analysis and development.</p>
<b>Pre-Requisite Courses</b>	No course recommendations
<b>Topics</b>	
<b>1. INTRODUCTION</b> 1.1) COURSE OUTLINE & PROJECT BRIEF	
<b>2. USER RESEARCH &amp; MARKET NEED I</b> 2.1) DESIGN RESEARCH PROCESS & MANUFACTURING APPROACH 2.2) NEW PRODUCT DEVELOPMENT (NPD) OF INDUSTRIAL DESIGN	
<b>3. USER RESEARCH &amp; MARKET NEED II</b> 3.1) METHODOICAL IN DESIGN PROCESS & MANUFACTURING 3.2) THE DESIGN DEVELOPMENT FLOW IN PRODUCT DESIGN LIFECYCLE	
<b>4. ESTABLISHING DESIGN CRITERIA</b> 4.1) CONCEPT DESIGN GENERATION & STYLING : SEMANTIC, ANOLOGY, METAPHOR IN DESIGN	
<b>5. INITIAL IDEATION &amp; THUMBNAIL SKETCHES</b> 5.1) CONCEPT DESIGN GENERATION & STYLING : DESIGN CONCEPTS VISUALIZATION I 5.2) UNDERSTANDING TOOLS ENVIRONMENT & INTERFACE	
<b>6. IDEA DEVELOPMENT I : INITIAL DEVELOPMENT</b> 6.1) CONCEPT DESIGN GENERATION & STYLING : DESIGN CONCEPTS VISUALIZATION II 6.2) UNDERSTANDING TOOLS ENVIRONMENT & INTERFACE 6.3) (1) SKETCHING 6.4) (2) DRAWING & MODELING	

<p><b>7. IDEA DEVELOPMENT II : MOCK UP/ SOF MODEL</b>  7.1) CONCEPT DESIGN GENERATION &amp; STYLING : DESIGN CONCEPTS VISUALIZATION III  7.2) UNDERSTANDING TOOLS ENVIRONMENT &amp; INTERFACE  7.3) (1) SKETCHING  7.4) (2) DRAWING &amp; MODELING</p>
<p><b>8. IDEA DEVELOPMENT III : INFORMATIVE SKETCHES</b>  8.1) CONCEPT DESIGN GENERATION &amp; STYLING : DESIGN CONCEPTS VISUALIZATION IV  8.2) UNDERSTANDING TOOLS ENVIRONMENT &amp; INTERFACE  8.3) (3) ASSEMBLY  8.4) (4) RENDERING</p>
<p><b>9. PRELIMINARY TECHNICAL DRAWING</b>  9.1) PRODUCT DESIGN VALIDATION &amp; IMPROVEMENT</p>
<p><b>10. BLOCK MODEL &amp; FINAL TECHNICAL DRAWING</b>  10.1) PRODUCT DESIGN VALIDATION &amp; IMPROVEMENT  10.2) ADVANCE PRODUCT DESIGN MANUFACTURABILITY (DFM)  10.3) PROJECT PORTFOLIO</p>
<p><b>11. PRE ASSESSMENT</b>  11.1) PRESENTATION OF PORTFOLIO, SKETCHES DEVELOPMENT, MOCK UPS &amp; TECHNICAL DEVELOPMENT</p>
<p><b>12. MODEL HANDLING OPTIMIZATION</b>  12.1) REFINEMENT : TECHNICAL &amp; DESIGN DEVELOPMENT (SYNTHESIS)</p>
<p><b>13. DETAIL DESIGN : FABRICATION &amp; PROTOTYPING I</b>  13.1) MODEL MAKING : STUDIO INDIVIDUAL WORK, DEVELOPMENT AND REFINEMENT</p>
<p><b>14. DETAIL DESIGN : FABRICATION &amp; PROTOTYPING II</b>  14.1) PREPARATION FOR FINAL ASSESMENT : FINAL DELIVERABLES</p>

Assessment Breakdown	%
Continuous Assessment	100.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	PROGRESS 1 : Group/Individual Assignment (Research Introduction)	10%	CLO1
	Assignment	PROGRESS 2 : Initial Design Research	10%	CLO2
	Assignment	PROGRESS 2 : Research Methodology & Design Concept	10%	CLO2
	Assignment	PROGRESS 3 : Critic Session on Concept Design	10%	CLO3
	Assignment	PROGRESS 3 : Pre Assessment on Design Development	10%	CLO3
	Final Project	FINAL ASSESSMENT & OVERALL PROJECT PRESENTATION	50%	CLO3

Reading List	Reference Book Resources
	<ul style="list-style-type: none"> <li>• Hudson, J. 2011, <i>Process: 50 Product Design from Concept to Manufacture</i> Laurence King Ltd London, England</li> <li>• Juliàn, F., &amp; Albarracín, J., <i>Sketching &amp; Rendering: Techniques for Product Designers</i>, Basheer Graphic Books Singapore</li> <li>• Koos Eissen, Roselien Steur, <i>Sketching – Drawing techniques for product designers</i>, Page One Publishing Pte Ltd. [ISBN: 9789812456212]</li> <li>• Eissen, k., &amp; Steur, R. 2014, <i>Sketching product design Presentation</i>, BIS Publishers Amsterdam</li> <li>• Cuffaro, Et all 2006, <i>Process, Materials, Measurements</i>, Rockport Publishers, Inc.</li> <li>• Ulrich, K.T &amp; Eppinger S.D 2003, <i>Product Design and Development</i>, McGraw-Hill Companies, Inc</li> <li>• Annemiek Van Boeijen, Jaap Daalhuizen, Roos Van Der Schoor, Jelle Zijlstra 2014, <i>Delft Design Guide</i>, Bis Publishers Netherlands [ISBN: 9789063693275]</li> <li>• Alex Milton, Paul Rodgers 2013, <i>Research Methods for Product Design</i>, Laurence King Publishing London [ISBN: 9781780673028]</li> <li>• Christian Boucharenc 2008, <i>Design for a Contemporary World</i>, NUS Press Singapore [ISBN: 9789971693473]</li> </ul>
Article/Paper List	This Course does not have any article/paper resources
Other References	This Course does not have any other resources