



UNIVERSITI TEKNOLOGI MARA

IDE506: ADVANCED DESIGN FOR MANUFACTURING

Course Name (English)	ADVANCED DESIGN FOR MANUFACTURING APPROVED
Course Code	IDE506
MQF Credit	3
Course Description	Advance Design For Manufacturing focused on four curriculum subject with suited well for domain of Industrial Design need in the flow development in product design lifecycle. The full spectrum of new product development has shared the sub topic toward designing a new concept of design in manufacturing. The subject will covered from sketch to the final surfaces based on software related and will bring out toward DFM in advance which followed by industrial need today. As part of the course, students will be doing a complete design assignment which related to the topic learned. They will go through the entire motions similar to an actual industrial design project and manufacturing in advance mode.
Teaching Methodologies	Lectures, Studio, Demonstrations, Tutorial, Workshop, Small Group Sessions , Computer Aided Learning
CLO	<p>CLO1 To define an easy way to build design from sketch to manufacturing based on software related.</p> <p>CLO2 Understand the fundamental & background of design analysis, compare original background between traditional & new method in DFM</p> <p>CLO3 Practice and analyze designs, improving the overall engineering design process in the manufacturing point of view with software related used.</p>
Pre-Requisite Courses	No course recommendations
Topics	
1. INTRODUCTION OF COURSE STRUCTURE AND OBJECTIVES 1.1) • Introduction of Advance Design For Manufacturing	
2. NEW PRODUCT DEVELOPMENT (NPD) OF INDUSTRIAL DESIGN 2.1) • Introduction of NPD in Industrial Design 2.2) • Build Complete Product Development	
3. THE DEVELOPMENT FLOW IN PRODUCT DESIGN LIFECYCLE 3.1) • Introduction of developing flow in product design lifecycle 3.2) • Build Design Optimization	
4. CONCEPT DESIGN GENERATION & STYLING (CDO) 4.1) • Generate efficient design concepts for structural parts. 4.2) • Learning industry leading topology optimization technology 4.3) • Works on 3D solid geometry 4.4) • Process flow software generated design	
5. MODEL HANDLING OPTIMIZATION 5.1) • Introducing & running first optimization 5.2) • Defining materials 5.3) • Shape controls	
6. UNDERSTANDING TOOLS ENVIRONMENT & INTERFACE 6.1) • Familiarized with environment & interface of software related 6.2) • Fundamental knowledge to sketch, design parts and products 6.3) • Understanding the environment, interface, icon, work model and grids. 6.4) • Understanding Construction Tree	
7. NURBS CURVES DOR 3D SURFACING AND UNDERSTANDING THE SURFACE TOOLS 7.1) • Using Curves, Transform Tools & Creating Surfaces 7.2) • Surface and solid editing tools, and rendering with material application techniques	

<p>8. PRODUCT DESIGNS VALIDATION 8.1) • Introduction of CAE Technology and FEM Introduction to Product Development Life Cycle (PDL). 8.2) • Exploration of basic concepts and history in Product Development & Engineering.</p>
<p>9. PRODUCT DESIGN IMPROVEMENT 9.1) • Fundamental Engineering Modeling (FEM) Techniques for Design Analysis 9.2) • Engineering Analysis Domain (Linear Static & Dynamic) 9.3) • Structural analysis for design validations (Linear Static) 9.4) • Fundamental Concept of Optimization & Intro to Design Optimization</p>
<p>10. PRE ASSESMENT 10.1) • Report all weekly Exercise Complication.</p>
<p>11. PRODUCT DESIGN OF MANUFACTURABILITY (DFM) IN ADVANCE (Phase 1) 11.1) • Introduction of toll and die design manufacturing 11.2) • Design Analysis & Guidelines in Manufacturing 11.3) • Design for Manufacturability (DFM) Techniques</p>
<p>12. PRODUCT DESIGN OF MANUFACTURABILITY (DFM) IN ADVANCE (Phase 2) 12.1) • Introduction of toll and die design manufacturing 12.2) • Design Analysis & Guidelines in Manufacturing 12.3) • Design for Manufacturability (DFM) Techniques</p>
<p>13. PRODUCT SIMULATION & FINAL SUBMISSION (Phase 1) 13.1) • Submitting ADFM data towards project studio</p>
<p>14. PRODUCT SIMULATION & FINAL SUBMISSION (Phase 2) 14.1) • Submitting ADFM data towards project studio</p>

Assessment Breakdown	%
Continuous Assessment	60.00%
Final Assessment	40.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Progress : Assignment 1	15%	CLO2
	Assignment	Progress : Assignment 2	15%	CLO1 , CLO2
	Assignment	Progress : Assignment 3	15%	CLO2 , CLO3
	Assignment	Progress : Assignment 4	15%	CLO2 , CLO3

Reading List	Reference Book Resources	<ul style="list-style-type: none"> • ROB THOMPSON 2007, <i>Manufacturing Processes For Design Profession</i>, Thames & Hudson • Kart T. Ulrich & Steven D. Eppinger 2003, <i>Product Design And Development</i>, Mc Graw Hill • DANIEL F. CUFFARO 2005, <i>Industrial Design: Materials and Manufacturin</i>, Rockport
Article/Paper List	This Course does not have any article/paper resources	
Other References	This Course does not have any other resources	