



UNIVERSITI TEKNOLOGI MARA

ADE444: EXPERIMENTAL CONSTRUCTION

Course Name (English)	EXPERIMENTAL CONSTRUCTION APPROVED
Course Code	ADE444
MQF Credit	3
Course Description	The course is designed as an experimental approach merging technical and creativity, to enable students in understanding the problem and defining the solution in creative ways. This course explained the significance of creative technical thinking which is applicable to solve the task given. It is also used to develop the ways of thinking to get the solution of any consequences in the design process. This course will also provide an opportunity for students to embark on a basic experimental study into a design and its functionality concentrate in the experimental of material, weight, height, and construction.
Transferable Skills	Technical Skill (creative constructional techniques), problem-based identification, basic material properties & knowledge, basic logical and physics knowledge.
Teaching Methodologies	Lectures, Blended Learning, Studio, Demonstrations, Practical Classes, Simulation Activity, Presentation, Supervision, Problem-based Learning
CLO	CLO1 Perform construction and assembly as experimentation on structure and form study in design. CLO2 Assess creative design problems through creative thinking skills. CLO3 Report on creative design processes in developing structure and construction for product design.
Pre-Requisite Courses	No course recommendations
Topics	
1. INTRODUCTION & BRIEF ON EXPERIMENTAL CONSTRUCTION OVERVIEW	
1.1) • Brief on Course Info & Structure 1.2) • Brief on Course Topics 1.3) • Brief on Course Assessment	
2. EXPERIMENTAL ON WEIGHT AND HEIGHT I	
2.1) • Theory and experiment in Weight principles 2.2) • Theory and experiment in Height principles 2.3) • Application of Weight & Height principles in design	
3. EXPERIMENTAL ON WEIGHT AND HEIGHT II	
3.1) • Structural design with force & balance 3.2) • Structural design with flow & motion 3.3) • Application of acceleration of the center of mass (of studied design)	
4. EXPERIMENTAL ON MATERIAL I	
4.1) • Theory of materiality, categories, its function, surface & sensory characteristic 4.2) • Theory of material competence, contextual connections, and combinations 4.3) • Technical and design implications of material	
5. EXPERIMENTAL ON MATERIAL II	
5.1) • Structural design with a material combination 5.2) • Structural design with functional surfaces of a singular material 5.3) • Application of material experimentation in structural design with functional aesthetic	
6. EXPERIMENTAL ON CONSTRUCTION I	
6.1) • Theory and experiment in type of construction and system 6.2) • Theory and experiment in geometric & non-geometric construction 6.3) • Analysis of geometric construction of selected design/existing model	

7. EXPERIMENTAL ON CONSTRUCTION II

- 7.1) • Structural design experimentation with a single construction system
- 7.2) • Structural design experimentation with multi-construction/modular system
- 7.3) • Application of construction experimentation in complex geometry design

8. COMBINATION PROJECT I

- 8.1) • Developing core - structural design experimentation project with weight, height and flexibility principles [PHASE 1]

9. COMBINATION PROJECT II

- 9.1) • Developing surface – context design experimentation project with material & sensory characteristic [PHASE 2]

10. COMBINATION PROJECT III

- 10.1) • Developing complex – structural/geometry design experimentation project with bionic influence (nature-mimic structural design) [PHASE 3]
- 10.2) • Total integration and creative consideration of PHASE 1 – PHASE 3 as a complete design package.

Assessment Breakdown	%
Continuous Assessment	100.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	TASK 2: ANALYSIS & EVALUATION ON EXISTING CONSTRUCTIVE MODEL. Students are required to conduct a problem-based learning via analysis and evaluation of existing structure, form & related component of one (selected) design. The evaluation will be based on the main criteria of basic technical, mechanical & design principles. From the result, students need to construct newly-improved design creatively to solve the existing problems.	20%	CLO2
	Assignment	TASK 3: CREATIVE DESIGN IDEA Students are required to propose a new creative solution, design and construct a new model that integrates all components and principles of a good constructional form using designated types of materials to create complex unique shape/form. All the design process and development procedures need to be reported & presented.	20%	CLO3
	Assignment	FINAL TASK: NEO-BIONIC STRUCTURE EXPLORATION In this task, students will develop potentially pioneering construction methods based on models from the nature world, mimicking the concept of bionic structure. The creation/design model will be assessed for new materials application, innovative construction methods and inspiration for the creative design development.	40%	CLO3
	Presentation	TASK 1 : CONSTRUCTION & ASSEMBLY Students are required to present their work on basic structure & form construction together with research findings on the type of structure & form.	20%	CLO1

Reading List	Recommended Text	<ul style="list-style-type: none"> • 2016, <i>Pentak, Design basics.</i>, Boston, MA • Bramston, Dave 2016, <i>dea searching for design : how to research and develop design concepts.</i>, London. - New York , 2016. • Yeomans, David T 2015, <i>How structures work : design and behaviour from bridges to buildings.</i>, Hoboken • Fogler, H. Scott 2014, <i>Strategies for creative problem solving</i>, Upper Saddle River New Jersey • Ambrose, Gavin 2013, <i>The fundamentals of creative design</i>, Industrial Design Magazine Lausanne, Switzerland
Article/Paper List	This Course does not have any article/paper resources	
Other References	This Course does not have any other resources	