

INDIAN INSTITUTE OF INFORMATION TECHNOLOGY DESIGN AND MANUFACTURING
(IIITDM) KANCHEEPURAM

Course Title	Embedded Kinetic Artwork	Course No				
Specialization	Integrated Product Design	Structure (LTPC)	2	1	0	3
Offered for	Master of Design (Semester 2)	Status	Core		Elective X	
Prepared by	Dr Noor Mohammad					
Prerequisite	Undergraduate engineering	To take effect from	2021 Batch			
Course Objectives	<ul style="list-style-type: none"> • Introduce the concept of sculpture and history. • Design concepts of the sculpture and kinetic sculpture • Aesthetics and kinetic art work in building sculpture. • Embedded systems, sensors, actuators and programming models to realize the kinetic sculptures. 					
Course Outcomes	<p>Students understand <i>creative problem solving</i> both in engineering and the arts. Students can understand and design the moving and innovative sculptures</p>					
Contents of the course (With approximate break up of hours)	<p>Module-1: Programming and Electronics fundamentals (18 hrs)</p> <ul style="list-style-type: none"> • Programming fundamentals • Electronics fundamentals– Input sensors (switches, potentiometers, resistive sensors including light, temperature, flex, etc., rangefinders, optical switches, etc.)– Output actuators (servos, DC motors, stepper motors, LEDs, relays, switching transistors, etc.) • Programming reactive systems– External chip interfacing with protocols such as SPI – Interrupt prog <p>Module-2: Constructing Kinetic Art (24 hrs)</p> <ul style="list-style-type: none"> • Art history review of kinetic art • Discussion of contemporary kinetic artists (Jim Campbell, Jack Dollhausen, Arthur Ganson, Rebecca Horn, Dan Rozin, Sabrina Raaf, Alan Rath, Peter Vogel, etc.) • Formal elements of 3d art such as aesthetics, proportion, and balance • Material studies (plastic, metal, paper, wood, etc.) • Mechanical linkages and physical construction • Concepts and meaning in art– Artistic design process <p>Evaluation: 70% assignments/activities + 30% End Semester</p>					
Texts & References	<ol style="list-style-type: none"> 1. Candy, Linda, Edmonds, Ernest, Poltronieri, Fabrizio Augusto (2018), Explorations in Art and Technology, Edition 2, Springer-Verlag London, ISBN:9781447173663 2. T. Igoe (2004). Physical Computing: Sensing and Controlling the Physical World with Computers, Edition 1, Premier Press, ISBN:9781592003464 3. Massimo Banzi (2011), Getting Started with Arduino, Edition 2, O’Reilly, ISBN-13: 9781449309879. 4. J. Noble. Programming Interactivity: A Designer’s Guide to Processing, Arduino, and Open Frameworks, O’Reilly Media, Inc., ISBN:9781449311445 5. C. Reas, B. Fry, and J. Madea (2015), Processing: A Programming Handbook for Visual Designers and Artists. The MIT Press, ISBN:9780262028288 6. H. Yanco, H. J. Kim, F. G. Martin, and L. Silka (2006), Artbotics: Combining art and robotics to Broaden participation in computing. In AAAI: Resources for AI Education, Stanford, CA. 7. H. J. Kim, D. Coluntino, F. G. Martin, L. Silka, and H. A. Yanco (2007), Artbotics: community- based collaborative art and technology education. In SIGGRAPH ’07: Educators Program, San Diego, California, 					