

MDes in Electronic Product Design

The MDes Program in Electronic Product Design aims at creating human resource skilled at design and development of electronic products, services and applications targeting various segments like toy designs and services, healthcare products and ecosystem, mobile devices and services, electronic components, and industrial products. In addition to designing electronic products and services, the program also aims to create skilled human resources in Industry 4.0, especially targeting the ability to virtually prototype, train and design electronic products and services.

Intended skill sets among the graduating students

Through the proposed program, the Department of Design aims to impart the following skill sets and expertise in graduating students:

- **Human-centered design processes and methods** where students will learn methods and approaches of human centered design including but not limited to user research, analysis, empathy mapping, design research and designing products and services
- **Electronic product design and detailing** where students will learn about the product design aspect and product details for designing electronic devices
- **Design for manufacturing** to educate students on manufacturing process and methods to develop innovative electronic products
- **Materials and manufacturing processes** to impart skills about various materials, their capabilities, strength and weaknesses and manufacturing processes for dedicated to different materials
- **Form and structure exploration, visualization, and analysis** where students will learn about product form, product structure, features and functionalities, product aesthetics, and product visualization to design useful, meaningful, usable and pleasurable electronic products and services
- **User Experience (UX) design** where students will learn to design the digital experiences via learning the requirement gathering, features and functions, navigational flow, task flows, and wireframes of electronic products and services
- **Designing interaction techniques and user interfaces** to educate upon approaches to design input methods and techniques for natural, intuitive and engaging interactions and interfaces
- **Designing Virtual Reality (VR) prototyping and training platforms** to educate to use VR for building 1:1 virtual prototypes, evaluate them for aesthetics, functions, ergonomics and others and building training and simulation services for electronic products
- **Design for environmental sustainability** to educate students on product design processes that adopt sustainable methods and approaches to design environment friendly products and services
- **Human factors** where students learn the concepts of physical and cognitive ergonomics that significantly impact on long term product usage, acceptance and adoption
- **Systems thinking** where students learn about the holistic approach on how system's component interrelate and how systems work over time and within the context of larger systems.
- **Standards and regulatory norms in EPD** to learn about rules, guidelines, common and repeated use, product characteristics or related processes and methods

In addition to primary skill sets that we aim to impart in graduating students, the department will also educate the basics on quick and easy software and hardware prototyping, applications of ready to use sensors, actuators and microcontrollers, Internet of Things (IoT) architecture and computing and virtual reality.

Course Curriculum Structure

Course Code	Course title	L-T-P-C
Semester I		
DD 542	Introduction to Industrial Design	2-0-0-4
DD 543	Product Design Methods	2-0-4-8
DD 544	Ergonomics in Product Design	2-0-2-6
DD 545	Rapid Prototyping and Development	0-1-4-6
DD 5/6xx	Elective I	x-x-x-6
Total credits:		30
Semester III		
DD 509	Interaction Design	2-1-0-6
DD 546	Product Form and Structures	0-1-4-6
DD 547	Design for Environmental Sustainability	1-1-0-4
DD 548	Embodiment Design	2-0-2-6
DD 549	Systems thinking	1-1-0-4
DD 5/6xx	Elective II	x-x-x-6
Total credits:		32
Semester III		
DD 608	Expert Workshop	0-0-2-0
DD 5/6xx	Elective III	x-x-x-6
DD 609	Project I	0-0-18-18
Total credits:		24
Semester IV		
DD 610	Project II	0-0-24-24
Total credits:		24

Total credits for all semesters – 110

DD 609: Project (Phase I) and DD 610: Project (Phase II) - The students will execute a collaborative electronic product design project. The collaboration will involve at least one faculty member from Department of Design and can involve faculty from other departments and industry partners.

DD 608 Expert Workshop - The course aims to acquaint students with the latest developments in the electronic product design field through invited talks, interactive sessions, workshops by industry and academia experts.

List of Electives

Proposed New Elective Courses of Department of Design

Course Code	Course title	L-T-P-C
DD 550	Image Processing with Machine Learning	3-0-0-6
DD 551	Biomedical Devices	3-0-0-6
DD 552	Design of Embedded Systems	2-0-2-6
DD 553	Basics of Digital Signal Processing	3-0-0-6
DD 554	Pattern Recognition and Machine Learning	3-0-0-6
DD 555	IoT Enabled Smart Grids	3-0-0-6
DD 556	Bio signals in medical device design	2-0-2-6
DD 557	Fundamentals of Sensors and their Applications	3-0-0-6

Existing Elective Courses of Department of Design

Course Code	Course title	L-T-P-C
DD 510	Creativity, Innovation and Design Management	3-0-0-6
DD 512	New Media Studies	1-2-0-6
DD 513	Lighting Design	1-0-4-6
DD 514	Collaborative Design Methods for New Product Development	1-2-0-6
DD 516	Digital Human Modelling and Simulation in Product Design	2-0-2-6
DD 517	Automobile Design	1-1-4-8
DD 521	System Design for Sustainability	2-0-2-6
DD 522	Furniture and Future	2-0-2-6
DD 524	Graphic Design Studio	0-1-4-6
DD 525	Structural Packaging Design	1-0-4-6
DD 527	Introduction to Toy Design	1-0-4-6
DD 528	Visual Language	2-0-3-7
DD 529	Information Design for Visual Communication	1-0-5-7
DD 531	Game Design	2-0-2-6
DD 533	Auditory and Voice User Interaction Design	2-1-0-6
DD 534	HCI in Virtual Reality	2-1-0-6
DD 537	Introduction to Service Design	2-0-2-6
DD 538	Additive Manufacturing and Design	1-0-4-6
DD 601	Usability Engineering	2-1-0-6
DD 604	Environment and Experiential Design	2-0-3-7
DD 607	Creativity and Innovation	2-0-2-6