

# NIRMA UNIVERSITY

<b>Institute:</b>	<b>Institute of Design</b>
<b>Name of Programme:</b>	<b>Bachelor of Design in Industrial Design</b>
<b>Course Code:</b>	<b>IDPR 315</b>
<b>Course Title:</b>	<b>Internet of Things in Product Design</b>
<b>Course Type:</b>	( <input checked="" type="checkbox"/> Core/ <input type="checkbox"/> Value Added Course/ <input type="checkbox"/> Departmental Elective/ <input type="checkbox"/> Institute Elective/ <input type="checkbox"/> University Elective/ <input type="checkbox"/> Open Elective Any other)
<b>Year of introduction:</b>	<b>2021</b>

### Credit Scheme

L	T	Practical component				C
		LPW	PW	W	S	
1	-	3	4.5	-	-	6

### Course Learning Outcomes (CLO):

At the end of the course the students will:

1. Design a smart product using the relevant electronic tool kit
2. Build an application to support the smart product using principles of User Experience Design. Information architecture and Usability Engineering
3. Apply the finer nuances of User Interface, User Interaction and User Experience design based on User research
4. Design skills to design graphic interface using appropriate software  
Gain technical skills and know how of electronic components and programming of sensors

### Syllabus:

**Total Teaching hours: 127.5**

Unit	Syllabus	Teaching hours
Unit-I	<b>Introduction to UI- UX</b>  1.1 What is UI-UX Design 1.2 The necessity and function of UI-UX Design; programs and languages that drive the functions 1.3 User Interaction with products, applications and services 1.4 Role of a UI- UX Designer; case studies of various types of Information architecture and its connectivity to Supply chain	17.5
Unit-II	<b>Understanding the back-end of the Smart devices:</b>  2.1 Introduction to Micro-controller 2.2 Sensors: Functions and programming 2.3 Introduction to digital wire-framing for Interface design 2.4 The working of the elements together	30

Unit-III **UI-UX Design Process: Initial Research:**

- 3.1 Identification of a product category for intervention
- 3.2 Research on the Smart product domain
- 3.3 Understanding User Needs and Goals; Understanding cognitive processes 30
- 3.4 Study and analysis of relevant technology for application to the product
- 3.5 Insights and concept development of Product architecture using physical and digital components

Unit-IV **Internet of Things in Product Design- Minor Design Project:**

- 4.1 Working on NODEMCU ESP Controller with Server
- 4.2 Interfacing wireless sensors and actuators
- 4.3 Developing IOT based android application for hardware control 50
- 4.4 Developing low fidelity prototyping
- 4.5 Constructing high fidelity prototype along with User testing

Self Study: -

Suggested Readings/ References: -

1. *The Elements of User Experience: User-Centered Design for the Web* by Jesse James, Publishers: New Riders, 2010
2. *Observing the User Experience: A Practitioner's Guide to User Research* by Mike Kuniavsky, Andrea Moed, Publishers: Morgan Kaufmann, 2012
3. *Sketching User Experiences: Getting the Design Right and the Right Design Book* by Bill Buxton, Publishers: Focal Press, 2010
4. *Handbook of Usability Testing: How to Plan, Design, and Conduct Effective Tests* (Paperback) by Jeffrey Rubin, Dana Chisnell, Publisher: Wiley, 2008
5. *Arduino Programming in 24 Hours, Sams Teach Yourself*, by Richard Blum, Publisher: Pearson Education, 2015

Suggested List of Experiments: -

Suggested Case List: -