

NIRMA UNIVERSITY
INDUSTRIAL DESIGN PROGRAMME
Bachelor of Design, Department of Design
Year IV, Semester VII

L	T	P	C
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Course Code	IDTH 415 E
Course Title	Advanced Interaction Technologies

Course Learning Outcomes (CLO):

At the end of the course the students will:

1. Generate work in emerging domains of Interaction Design
2. Build an understanding of Human Machine Interaction
3. Design GUI in Open source Programming language like Python
4. Develop Program in Python using Raspberry Pi
5. Illustrate Programming skills for Touchscreen and NEXTION Displays

Syllabus:

Total Teaching hours: 60

Unit 1: New tools for Interaction: AR, VR & IOT

Teaching hours: 25

- 1.1 Introduction to Augmented Reality (AR) and Virtual Reality (VR)
- 1.2 Wireless Interaction Systems and Internet of Things (IoT)
 - 1.2.1 Voice Assistant Systems ex. Alexa and Google Home
 - 1.2.2 Communication with Machines using IoT
- 1.3 Introduction to Raspberry Pi
 - 1.3.1 Machine to Machine Interaction using Camera and Open CV (an open source computer vision and machine learning software library)
 - 1.3.2 Designing a GUI using Python and Raspberry Pi

Unit 2: Human Machine Interface

Teaching hours: 35

- 2.1 Introduction to Human Machine Interface (HMI) and Human-Computer Interaction (HCI) Design
- 2.2 Interacting with NEXTION Displays
 - 2.2.1 Designing a Simple HMI for HOME Automation System
 - 2.2.2 Designing a Simple HMI for a Digital Toy
 - 2.2.3 Designing a Robot Interaction panel- Case Study of Human Robot Interaction

Suggested Readings:

1. *Augmented Reality and Virtual Reality* by M.Claudia and Timothy Jung, Springer, ISBN 978-3-319-64027-3, Volume 0, 2017
2. *Future Interaction Design* by Pertti Saariluoma, Hannakaisa Isomäki, Springer Publications, ISBN 978-1-84800-385-9, Volume 1, 2009

w.e.f. Academic year _2020 and onwards

Key: L= Lecture, T= Tutorial, P= Practical, C= Credit