

Basic Fundamental Innovation Development of Hardware Design and Prototyping with real-time examples and Practicals Interdisciplinary Program Powered by Virtual Innovation Lab (In conformance with UN SDG)	
Eligibility: EEE, CSE, ME, CE BTech (I-IV) Years. Instructor Led Training.	
Objective: The world is embarking on the 4th Industrial revolution. We need solutions and platforms for teachers and students to improve teaching, learning and research competence and develop 21st century skills like problem solving, innovation, collaboration, leadership and practical skills.	
Course Outline: Basic Fundamental Innovation Development of hardware design and prototyping interdisciplinary program Enables Multiple Guided and Open Innovations. Innovative technology bringing advanced level hands-on engineering challenges for colleges/universities. Conceptualization to Finalization stage including Abstract, Block diagram, Circuit building and Simulation through Proteus, Coding, Simulation of a working prototype.	
Outcome: 1.Help students with project based learning, innovation and basic prototyping in the areas of Embedded systems and build working virtual/hardware prototypes. 2. Ideation, Design Thinking, Computational Thinking, Physical Computing, Minimum Viable Product including Circuit Design, Circuit Building, Simulation and Coding.	
S.No.	List of Practicals
1	Electronic Eye Controlled Security System using 8051 Controller
2	Arduino based Electronic Eye Controlled Security System
3	Rain Alarm by 8051 Controller
4	Arduino based Rain Alarm
5	Shadow Alarm by 8051 Controller
6	Arduino based Shadow Alarm
7	Overhead Water Tank Level Indicator by 8051 Controller
8	Arduino based Overhead Water Tank Level Indicator
9	Auto Intensity Control of Street Light by 8051
10	Arduino based Auto Intensity Control of Street Light
11	Highway Lighting System with Auto Turn Off on Day Time using 8051 Controller
12	Arduino based Highway Lighting System with Auto Turn Off on Day Time
13	LED Lamp Dimmer Circuit using 8051 Controller with Push button
14	Arduino based LED Lamp Dimmer Circuit with Push button
15	Discotheque Light Stroboscopic Flasher using 8051 Controller
16	Arduino based Discotheque Light Stroboscopic Flasher
17	Beacon Flasher using 8051 Controller
18	Arduino based Beacon Flasher
19	Fire Detection with Alarm Sound using 8051 Controller
20	Arduino based Fire Detection with Alarm Sound
21	Temperature Detection with Alarm Sound using 8051 Controller

22	Arduino based Temperature Detection with Alarm Sound
23	Light Detection with Alarm Sound using 8051 Controller
24	Arduino based Light Detection with Alarm Sound
25	Moisture Detection with Alarm Sound using 8051 Controller
26	Arduino based Moisture Detection with Alarm Sound