INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI
भारतीय प्रौद्योगिकी संस्थान तिरुपति

भारतीय प्रौद्योगिकी संस्थान तिरुपति

1.	Title of the course	Control and Automation Laboratory
2.	Course number	EE403P
3.	Structure of credits	0-0-3-2
4.	Offered to	UG
5.	New course/modification to	Modification To EE4191/12
6.	To be offered by	Department of Electrical Engineering
7.	To take effect from	July 2022
8.	Prerequisite	Nil
9.	**Course Objective(s):** To introduce various interdisciplinary experimental modules required for the automation industry.	
10.	**Course Content:** Solar energy training system: solar energy emulator to emulate the output of a solar panel under different environmental conditions; Wind turbine training system: experiments for performance analysis and to determine relevant coefficients; Programmable logic controllers (PLC), ladder logic and functional block diagram (FBD) programming for control of DC motor, VFD, and star-delta starter; Level control of a four tank system; Robotics: experiments on the control of omnidirectional and five-axis arm robot; Internet of Things (IoT) experiments; Electro-pneumatics and electro-hydraulics systems: experiments on pneumatic and hydraulic circuits using FluidSim software; Hardwired and PLC based control of pneumatic and hydraulic systems.	
11.	**Textbook(s):** 1. Kothari D P, *Renewable Energy Sources and Emerging Technologies*, 2nd Edition, Prentice Hall (2014). 2. Parr A, *Hydraulics and Pneumatics*, 3rd Edition, Elsevier (2010).	
12.	**Reference(s):** 1. Curtis J D, *Process Control Instrumentation Technology*, 8th Edition, Prentice Hall (2005). 2. Hackworth J R, *Programmable Logic Controllers - Programming Methods and Applications*, 3rd Edition, Pearson Education India (2003). 3. Hughes C, *Robot Programming - A Guide to Controlling Autonomous Robots*, 4th Edition, Que Publishing (2016).	