

Shree Rahul Education Society's (Regd.)

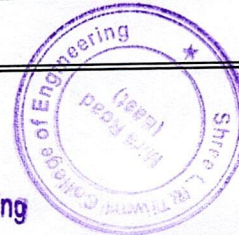
SHREE L. R. TIWARI COLLEGE OF ENGINEERING

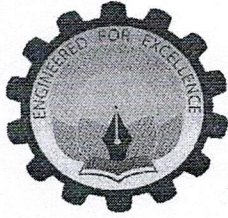
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Minority Status (Hindi Linguistic)

Curriculum for Add on /Certificate/Value added programs for last five years

Sr. No	Name of Add on /Certificate /Value added programs offered and online MOOC programs like SWAYAM, NPTEL etc. programs offered	Year of offering
1	Structural and Architectural Aspects in Civil Engineering	2022 -2023
2	AWS Cloud	2022 -2023
6	Advanced Python for Mechanical Engineering	2022 -2023
7	Advanced Cybersecurity Malware Analysis	2022 -2023
8	Digital VLSI Design	2022-2023
9	Product Design and Development	2022-2023
10	5 G Communication	2022 -2023
11	Environmental Ethics	2022-2023
14	Game Asset Development using Blender	2022-2023
15	Machine Learning	2022-2023
16	Flutter	2022-2023
17	Fundamental and Application of Robotics Lab	2021-2022
18	AWS Cloud	2021-2022
19	Internet of Things	2021-2022

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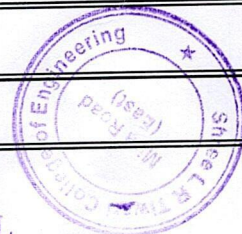
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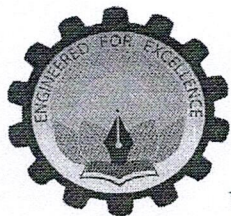
Curriculum for Add on /Certificate/Value added programs for last five years

Sr. No	Name of Add on /Certificate /Value added programs offered and online MOOC programs like SWAYAM, NPTEL etc. programs offered	Year of offering
23	Add on course "Drone Technologies"	2021-2022
24	Python for Mechanical Engineering	2021 - 2022
25	A complete report writing workshop using LaTeX software	2019-2020
26	Value education on Self Development	2019-2020
27	Personality Development: Self-Discovery Intensive	2019-2020
28	Solid Works and Ansys	2019-2020
29	Integrity Engineering: Nurturing Values in Technology	2019-2020
30	Essentials of Dharma: Mindful Decision-Making	2019-2020
31	Value Education for Mind Control: Brainpower Enhancement	2019-2020
32	Robotics	2018-2019
33	Ethics in engineering & value education :AURA	2018-2019
34	Dharma-A Life of Integration	2018-2019
35	Basic Programming Using Python	2018-2019
36	Ethics in engineering and value education	2018-2019
37	Human Rights	2018-2019
38	Environmental Impact Assessment	2018-2019

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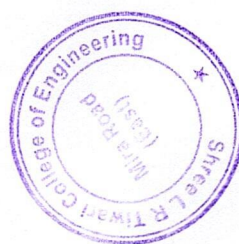
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Curriculum for Add on /Certificate/Value added programs for last five years

Sr. No	Name of Add on /Certificate /Value added programs offered and online MOOC programs like SWAYAM, NPTEL etc. programs offered	Year of offering
39	Soft Skill Development	2018-2019
40	Internet of Things	2018-2019
41	Panchkosh	2018-2019
42	Value added education on mind control	2018-2019
43	Personality Development	2018-2019



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Academic Year 2021-2022
E-Yantra Robotics Cell

Syllabus on “Fundamental and Application of Robotics Lab”

Objectives:

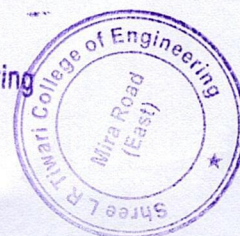
The student shall be able to

- Gain a solid understanding of the basic principles of robotics, including kinematics, dynamics, sensors, and actuators.
- Develop programming skills for robotics using languages such as Python and C++, with an emphasis on robot control and simulation.
- Acquire knowledge in designing and prototyping mechanical components for robotic systems.
- Learn to integrate electronic components, including sensors and microcontrollers, into robotic systems.

Sr. No.	Topic	Contents	Required Hours
1	Introduction of Course	Introduction and History of robots, Classification of robots, Present status and future trends. Basic components of robotic system. Basic terminology- Accuracy, Repeatability, Resolution, Degree of freedom. Sensors in robot – Touch sensors, Tactile sensor, Proximity and range sensors, Robotic vision sensor, Force sensor, Light sensors, Pressure sensors. Robot controls-Point to point control, Continuous path control, Intelligent robot, Number system, Block diagram of generic microcontroller, Microcontroller versus microprocessor, Criteria for selecting microcontroller,	15
2	Beginning with Fire Bird V ATMEGA2560	Avatars of Fire Bird V Robot, Fire Bird V Block Diagram, Fire Bird V ATMEGA2560 technical specification, Using Fire Bird V Robot (Connections, Powering up Fire Bird V, Power management system on the Fire Bird V, Battery Charging, Powering the robot on battery power, Powering the robot on auxiliary power) Overview of ATMEGA 2560, ATMEGA 2560 architecture, status register, Special function registers, RAM, ROM & EEPROM space, On-Chip peripherals, ATMEGA2560 pin configuration & function of each pin	15
3	Atmega programming	AVR data types and assembler directives, Addressing modes of AVR, Data transfer, Arithmetic, Logic and Compare, Rotate and Shift, Branch and Call instructions, assembly language programming, AVR I/O Port Programming, Time delay loop, Intel HEX file, Timer,	15

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NAAC Accredited | ISO 9001:2015 Certified
Tel. No.: 022-28120144 / 022-28120145 | Email: slrtee@rahuleducation.com | Website: www.slrtee.in

Academic Year 2021-2022
E-Yantra Robotics Cell

4	Serial communication protocols	UART protocol, I2C protocol, SPI protocol, Serial Port programming using polling and interrupt, I2C Programming,	7
5	Peripheral interfacing	PWM programming, ADC programming, EEPROM programming, Relay interfacing, Stepper and DC Motor control.	8

Outcomes:

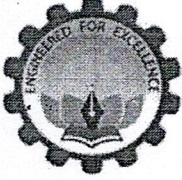
The student shall be able to

- Understand and apply fundamental principles of robotics.
- Program basic robot movements and control systems.
- Design and prototype simple mechanical components for robotic applications.
- Integrate sensors and actuators into a robotic system.

Mr. Sandeep Dwivedi
E-Yantra Incharge



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Tel. No.: 022-65295732 / 022-65142376 | Email: slrtce@rahuleducation.com | Website: www.slrtce.in

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Add on Course on AWS Cloud

Add on Course Details:

Course name: AWS Cloud Foundation

Add on Course Duration: 21/6/2022 to 25/6/2022

Organization: SLRTCE

Trainer Details:

Trainer name: Pravin Jangid, Sonali Padalkar, Sweta Padman, Komal Champanerkar

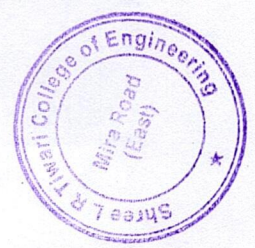
Trainer's Position: Assistant professor

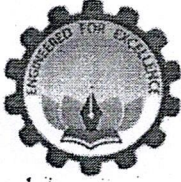
Topics Covered: AWS Cloud Foundation add on course was conducted by Computer Engineering Department which focused on providing solid foundation in AWS cloud technologies.

Add on course will be of 30hours

AWS Cloud Foundation internship was conducted by the Computer Engineering Department which focused on providing a solid foundation in AWS cloud technologies. Total duration of the training was 60 hours, out of which 30 hours was allocated for training and remaining 30 hours for Project. The following topics were covered during the Add-on:


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Schedule

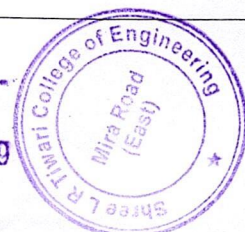
Date	Time	Hours	Session	Topics
21/6/2022	9.15 am to 12.15 pm	3 hours	Cloud concepts overview	<ul style="list-style-type: none">• Introduction to cloud computing• Advantages of the cloud• AWS cloud
21/6/2022	1.15 pm to 4.15 pm	3 hours	Cloud Economics and Billing	<ul style="list-style-type: none">• Fundamentals of pricing• Total cost of ownership• Case study• AWS organizations• AWS billing and cost managements• Technical support models
22/6/2022	9.15 am to 12.15 am	3 hours	AWS cloud global infrastructure	<ul style="list-style-type: none">• AWS Global Infrastructure• AWS services and service categories
22/6/2022	1.15 pm to 4.15 pm	3 hours	AWS cloud security	<ul style="list-style-type: none">• AWS shared responsibility model• AWS IAM• Servicing a new AWS account• Servicing data• Working to ensure compliance
23/6/2022	9.15 am to 12.15 am	3 hours	Networking and content delivery	<ul style="list-style-type: none">• Networking basis• Amazon VPC• VPC Networking• VPC security• Route 53• Cloud front
23/6/2022	1.15 pm to 4.15 pm	3 hours	Compute	<ul style="list-style-type: none">• Amazon EC2• AWS Lambda• AWS Elastic Beanstalk
23/6/2022	4.15 pm to 5.15 pm	1 hour	Mini Project	<ul style="list-style-type: none">• Mini project using AWS Sandbox
24/6/2022	9.15 am to 12.15 am	3 hours	Storage	<ul style="list-style-type: none">• AWS EBS• AWS S3• AWS EFS• AWS S3 Glacier

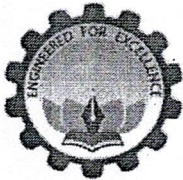
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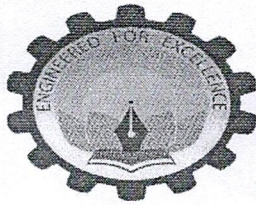
Tel. No.: 022-65295732 / 022-65142376 | Email: slrtce@rahuleducation.com | Website: www.slrtce.in

24/6/2022	1.15 pm to 4.15 pm	3 hours	Databases	<ul style="list-style-type: none"> • AWS RDS • AWS DynamoDB • Amazon Redshift • Amazon Aurora
24/6/2022	4.15 to 5.15 pm	1 hour	Mini project	<ul style="list-style-type: none"> • Mini project using AWS Sandbox
25/6/2022	9.15 am to 12.15 am	3 hours	Cloud Architecture	<ul style="list-style-type: none"> • AWS well Architected framework design principle operational excellence • Security • Reliability • Performance Efficiency • Cost optimization • AWS Trusted Advisor
25/6/2022	1.15 pm to 4.15 pm	3 hours	AWS Auto scaling and Monitoring	<ul style="list-style-type: none"> • Elastic load balancing • Amazon cloud watch • Amazon EC2 Auto scaling
25/6/2022	4.15 pm to 5.15 pm	1 hour	Project	<ul style="list-style-type: none"> • Mini project using AWS Sandbox

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Add on course on "Internet of Things"

Add on Course Details:

Course name: Internet Of Things

Add on Course Duration: 30 hours

Department Organizing event: EXTC, SLRTCE

Trainer Details:

M.K.Jeevarajan

Topics Covered:

1. IoT Introduction and Architectures
2. IoT using Thingspeak
3. IoT with Microsoft Azure
4. Iot Projects and Case Study
5. IoT with AWS IoT

Add on course will be of 30 hours

Schedule

30 DAYS Session on Internet of Things Master Class

By Pantech ProLabs

IoT Introduction and Architectures

DAY-1 Introduction to IoT

DAY-2 IoT Communication Protocols

DAY-3 Introduction to ESP32 and NodeMCU

DAY-4 Iot Clouds,Analytics & Data science

DAY-5 Sensors for IoT

IoT using Thingspeak

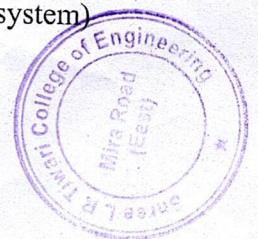
DAY - 6 Sending Data to Thingspeak -Arduino+Humidity+Air quality(Weather monitoring system)

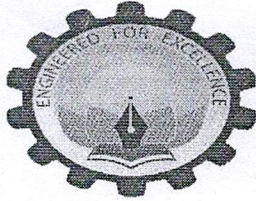
DAY - 7 How to Analyze IoT Data in ThingSpeak

DAY - 8 Deploying a Machine learning Model on the Cloud

DAY - 9 Thingspeak for IoT in agriculture

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DAY – 10 Smart Humidity Sensor - ThingSpeak, MATLAB, and IFTTT

IoT with Microsoft Azure

DAY– 11 Introduction to IoT with Microsoft Azure

DAY– 12 Implementing IoT with Azure

DAY– 13 Edge Computing and Analytics

DAY– 14 Cognitive services, Computer vision API

DAY– 15 Weather monitoring station using Microsoft Azure and Arduino

IoT Projects and Case Study

Day-16 Home automation using Google Assistant

Day-17 Industrial IoT using Zigbee and WIFI(Windmill case study)

Day-18 Recording sensor data to google sheet using IFTTT with Arduino and sending alerts

Day-19 Real time Video surveillance esp32cam and Blynk App

Day-20 Predictive Maintenance of a Duct Fan Using Nodemcu, ThingSpeak and MATLAB

IoT with AWS IoT

Day 21 Introduction to AWS IoT, Setting up Free tier AWS, AWS CLI, Policies, Security Credentials, and Testing

Day 22 Raspberry PI3 with AWS IOT SDK

Day 23 SNS Push Notifications, AWS IoT Analytics

Day 24 AWS Lambda Functions for IoT

Day 25 HTTPs Arduino sketch to AWS IoT Core for the ESP8266 and ESP32

Day 26 Using Mongoose OS on embedded devices for AWS IoT

Day 27 Storing data into the Dynamo Database from the AWS IoT control panel

Day 28 AWS Quicksight for data analytics and visualizations

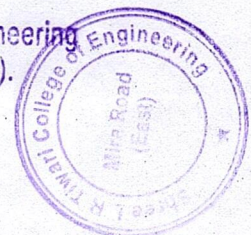
Day 29 AWS Device Shadows and multiple Pub/Sub's

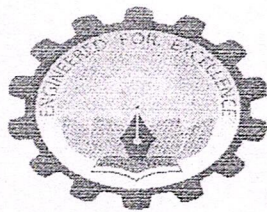
Day 30 Weather monitoring station using AWS IOT

Course Coordinator
(Name and Signature)

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Add on Course on Drone Technologies

Add on Course Details:

Course name: Drone Technologies

Add on Course Duration: 30 hours

Department Organizing event : ME , SLRTCE

Trainer Details: Trainer name: Mr.Atulkumar Mishra

Trainer's Position: Assistant professor

Topics Covered:

1. Introduction to drones and their applications
2. Drone Sensors, Propulsion and vertical motion, Battery of a drone
3. Introduction to drone programming
4. Key features of Drone Regulations 1.0
5. How to build your multi-rotor drone

Add on course will be of 30hours

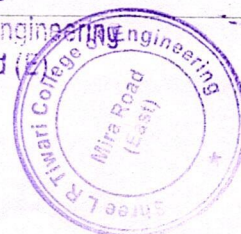
Schedule

Date	Duration	Time	Topics
04/3/2022	2hr	4.45pm to 6.45pm	Definition of drones, History of drones, Classification of drones based on structure. Application of drones .Dynamics of an aerial system ,Forces of flight, Principal axes and rotation of aerial systems Longitudinal axis Lateral(transverse) axis, Perpendicular axis .
5/03/2022	5hrs.	10am to 12 pm ,12.45pm to 3.44pm	Stability and Control ,Equilibrium Stability Stable system ,Unstable system Neutrally stable system ,Control Roll, Pitch, Yaw ,Throttle.
11/03/2023	2h	4.45pm to 6.45pm	Accelerometer, Barometer, Gyro Sensor, Magnetometer Other sensors - Distance sensors ,Light -Pulse Distance Sensor ,Radio Detection and Ranging ,Sonar -Pulse Distance Sensing ,Time of Flight (ToF) Sensors , Thermal sensors ,Chemical Sensors

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Department of Mechanical Engineering

Value Added/ Bridge/ Add-on Course Report on "Python for Mechanical"

Syllabus

Course Name: Python for Mechanical

Total Contact Hours: 30

This course empowers students to enhance their personal and professional lives through self-discovery and skill development. The interactive and experiential nature of the course ensures that students not only gain theoretical knowledge but also practical insights that can be applied in their daily lives.

Course Objectives: The students shall be able to

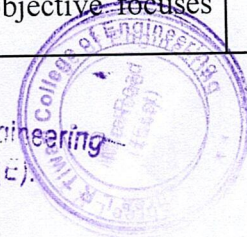
1. Introduction to Python Programming
2. Problem Solving with Python
3. Data Analysis and Visualization
4. Introduction to Automation and Scripting
5. Integration with Engineering Software

Sr. No.	Module Name	Content	Duration In hours
1	Introduction to Python Programming	Gain a fundamental understanding of Python programming language, including syntax, data types, and basic programming constructs. This objective aims to provide mechanical engineering students with a solid foundation in Python, ensuring they are comfortable with the language's basic elements.	8
2	Problem Solving with Python	Develop the ability to solve engineering problems using Python programming. This objective focuses	8

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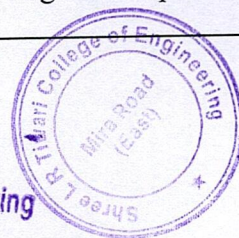


Department of Mechanical Engineering Value Added/ Bridge/ Add-on Course Report on “Python for Mechanical” Engineering.

		on applying Python to address challenges commonly encountered in mechanical engineering, such as numerical analysis, data manipulation, and algorithmic problem-solving.	
3	Data Analysis and Visualization	Explore techniques for handling and analyzing data relevant to mechanical engineering applications using Python libraries such as NumPy and Pandas. Additionally, learn to create visualizations to effectively communicate engineering insights using tools like Matplotlib and Seaborn.	8
4	Introduction to Automation and Scripting	Acquire skills in automating repetitive tasks and creating scripts to enhance efficiency in mechanical engineering processes. This objective emphasizes the practical application of Python in automating simulations, data processing, and other routine tasks encountered in engineering workflows.	8
5	Integration with Engineering Software	Learn how to integrate Python with commonly used mechanical engineering software and tools. This includes interfacing with Finite Element Analysis (FEA) software, Computational Fluid Dynamics (CFD) tools, and other specialized engineering applications. The goal is to enable students to leverage Python for extending the capabilities of	8

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Department of Mechanical Engineering
Value Added/ Bridge/ Add-on Course Report on "Python for Mechanical" *Engineering*

		<p>existing engineering software and creating custom solutions.</p> <p>These course objectives are designed to provide mechanical engineering students with a well-rounded introduction to Python, emphasizing its practical applications in solving engineering problems and enhancing their overall skill set.</p>	
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Course Outcomes: The students shall be able to

1. Proficiency in Python Programming.
2. Problem-Solving Aptitude
3. Data Analysis and Visualization Skills
4. Automation and Scripting Competence
5. Integration with Engineering Software Proficiency

Mr. Ninad Mahadeshwar

Mr. Manish Rane

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