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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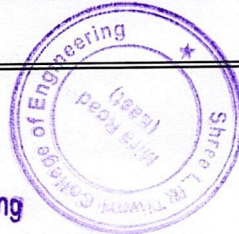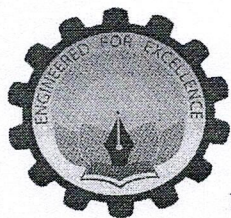Shree L. R. Tiwari College of Engineering
Kanakia Park, M

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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
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 Pytrhon	2018-2019
36	Ethics in engineering and value education	2018-2019
37	Human Rights	2018-2019
38	Environmental Impact Assesment	2018-2019

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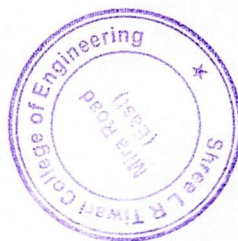Shree L. R. Tiwari College of Engineering
Park, Mira Road (E)

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 2022-2023

Department of Civil Engineering
Syllabus for Audit course on
"Structural and Architectural Aspects in Civil Engineering"

This audit course combines classroom instructions with hands-on labs on realistic building with structural considerations and a sustainability approach
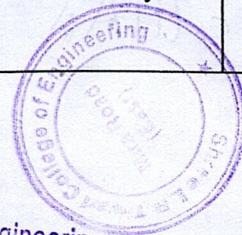
Course Objectives: The students shall be able

1. To study soil as foundation material for construction.
2. To understand the practical approach of design of structural members.
3. To understand the codal provisions for design of RCC structures.
4. To get a basic understanding of environmental issues with respect to the construction industry.
5. To learn about the methods to reduce environmental impact.
6. To understand the basics of what is green building/ sustainable development.

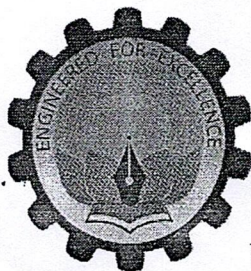| Module Number	Module Name	Content	Duration In hours
1	Introduction to Geotechnical Engineering	Scope of Soil mechanics, definition & classification of soil, Three-phase diagram of soil, physical & engineering properties of soil, Different tests conducted on Soils	2
2	Working Stress Method & Limit Stress Method	Concept of reinforced concrete, Working Stress Method - WSM as per IS: 456-2000. Introduction to Limit state Method of design as per IS:456- 2000	2
3	Analysis and design of singly reinforced and doubly reinforced rectangular beams	Analysis and design of singly reinforced and doubly reinforced rectangular beams for Flexure	3
4	Design of Slabs using Limit state method	Concept of simply supported one-way and two-way slabs as per IS: 456-2000	3
5	Design of simply supported Continuous slab	Design of Simply supported one way and two way continuous slab as per IS:456-2000	3

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Add on Course on AWS

Add on Course Details:
Course name: AWS Cloud Foundation
Add on Course Duration: 8/12/2022 to 15/12/2022
Organization: SLRTCE

Trainer Details: Trainer name: Pravin Jangid, Sonali Padalkar, Sweta Padman, Harsha Dave
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.
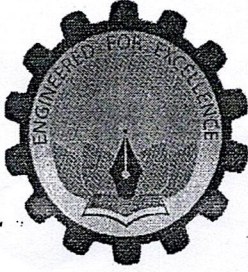Add on course will be of 30hours

Schedule

Date	Time	Hours	Session	Topics
8/12/2022	9.15 am to 12.15 pm	3 hours	Cloud concepts overview	• Introduction to cloud computing • Advantages of the cloud • AWS cloud
8/12/2022	1.15 pm to 4.15 pm	3 hours	Cloud Economics and Billing	• Fundamentals of pricing • Total cost of ownership • Case study • AWS organizations • AWS billing and cost managements • Technical support models
9/12/2022	9.15 am to 12.15 am	3 hours	AWS cloud global infrastructure	• AWS Global Infrastructure • AWS services and service categories
9/12/2022	1.15 pm to 4.15 pm	3 hours	AWS cloud security	• AWS shared responsibility model • AWS IAM • Servicing a new AWS account • Servicing data • Working to ensure compliance
12/12/2022	9.15 am to 12.15 am	3 hours	Networking and content delivery	• Networking basis • Amazon VPC • VPC Networking • VPC security • Route 53 • Cloud front

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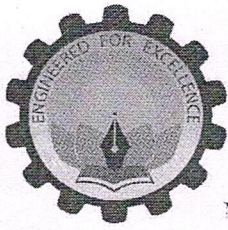# SHREE L. R. TIWARI
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12/12/2022	1.15 pm to 4.15 pm	3 hours	Compute	• Amazon EC2 • AWS Lambda • AWS Elastic Beanstalk
13/12/2022	4.15 pm to 5.15 pm	1 hour	Mini Project	• Mini project using AWS Sandbox
13/12/2022	9.15 am to 12.15 am	3 hours	Storage	• AWS EBS • AWS S3 • AWS EFS • AWS S3 Glacier
14/12/2022	1.15 pm to 4.15 pm	3 hours	Databases	• AWS RDS • AWS DynamoDB • Amazon Redshift • Amazon Aurora
14/12/2022	4.15 to 5.15 pm	1 hour	Mini project	• Mini project using AWS Sandbox
15/12/2022	9.15 am to 12.15 am	3 hours	Cloud Architecture	• AWS well Architected framework design principle operational excellence • Security • Reliability • Performance Efficiency • Cost optimization • AWS Trusted Advisor
15/12/2022	1.15 pm to 4.15 pm	3 hours	AWS Auto scaling and Monitoring	• Elastic load balancing • Amazon cloud watch • Amazon EC2 Auto scaling
15/12/2022	4.15 pm to 5.15 pm	1 hour	Project	• Mini project using AWS Sandbox

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

Syllabus

Course Name: Advanced Python for Mechanical Engineering

Total Contact Hours: 40

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. Numerical Methods and GUI Integration
3. Parallel and Concurrent Programming for Engineering Simulations
4. Machine Learning for Engineering Decision-Making
5. Advanced Data Visualization with GUI Reporting

Sr. No.	Module Name	Content	Duration In hours
1	Advanced Python Programming for Mechanical Applications	Explore advanced Python features, emphasizing their application in solving complex mechanical engineering problems. Relate these programming concepts to tasks such as finite element analysis (FEA) and computational fluid dynamics (CFD), showcasing the practical implementation of advanced Python in relevant engineering simulations.	8

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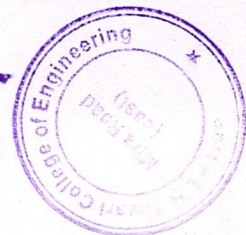
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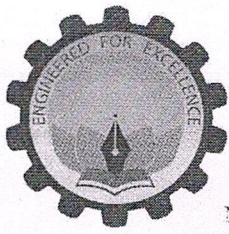Minority Status (Hindi Linguistic)

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

2	Numerical Methods and GUI Integration	Develop proficiency in advanced numerical methods while integrating graphical user interfaces (GUIs). Students will apply Python libraries like PyQt or Tkinter to create interactive interfaces for numerical simulations, linking theoretical concepts with practical GUI-based solutions for mechanical engineering challenges.	8
3	Parallel and Concurrent Programming for Engineering Simulations	Explore parallel and concurrent programming techniques in the context of mechanical simulations. Relate these concepts to tasks like simulating complex structural behaviors or fluid flow, demonstrating the application of Python in optimizing and parallelizing computations for advanced engineering analyses.	8
4	Machine Learning for Engineering Decision-Making	Introduce machine learning concepts and their application in mechanical engineering decision-making processes. Relate machine learning algorithms to predictive maintenance, optimization of design parameters, or fault detection in mechanical systems, showcasing how Python can be used to enhance decision support in engineering applications.	8

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

5	Advanced Data Visualization with GUI Reporting	Enhance data visualization skills using advanced plotting libraries and integrate these visualizations into GUI-based reporting systems. Relate this objective to creating interactive dashboards for presenting mechanical engineering data, enabling students to effectively communicate their findings to a diverse audience, including non-technical stakeholders.	8

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

Signature of HOD

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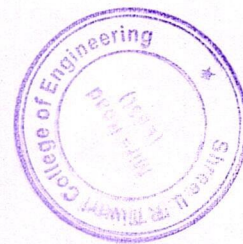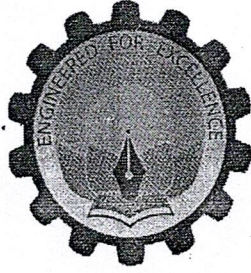Minority Status (Hindi Linguistic)

Add-on Course on Advanced Cyber Security
(Malware Analysis)

Add on Course Details:
Course name: Advanced Cyber Security (Malware Analysis)
Add on Course Duration: 26/06/2023 to 1/07/2023
Organization: SLRTCE

Trainer Details: Trainer name: Rajesh Gaikwad
Trainer's Position: Assistant professor
Topics Covered: Advanced Cyber Security (Malware Analysis) add on course was conducted by Computer Engineering Department which focused on providing Setting up a safe environment for malware analysis. Add on course will be of 60 hours
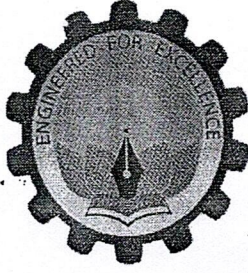
Schedule

Week-1 Schedule

Date	Time	Hours	Session	Topics	Instructor
26/06	9:15 am to 4:45 pm	6 hrs	Introduction to Malware Analysis	• The cyber kill-chain • Definition of malware and its role in the kill-chain • Different types of malwares • The goal of malware analysis • Types of malware analysis	Mr. Suyash Bhosale
27/06	9:15 am to 4:45 pm	6 hrs	Lab Environment andAnalysis setup	• [LAB] Setting up a safe environment for malware analysis	Mr. Suyash Bhosale

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28/06	9:15 am to 4:45 pm	6 hrs	Usage of setup and Fundamentals of Operational security	• Working on lab environment • Detonating malware securely and safely • Preparation of safety checklist	Mr. Suyash Bhosale
30/06	9:15 am to 4:45 pm	6 hrs	Basic Analysis and creation of malwares	• Basic static analysis • Basic dynamic analysis • Network analysis	Mr. Suyash Bhosale
01/07	9:15 am to 4:45 pm	6 hrs	Working on Case study, Reporting and Triage	• Working on live malware (BYOD, WannaCry,Stuxnet) • Effective ways of reporting and Triage	Mr. Suyash Bhosale

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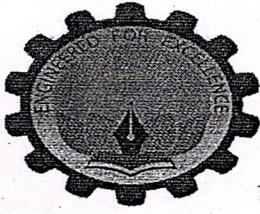
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Add on Course on Digital VLSI Design

Add on Course Details:

Course name: Digital VLSI Design

Add on Course Duration: 30 hours

Department Organizing Event: ECS, SLRTCE

Trainer Details: Trainer name: Mrs Manjiri Gogate, Ms Aarti Naik, Ms Khushbu Tikh, Ms Rashmi Maheshwari
Trainer's Position: Assistant professor

Topics Covered:

Student will learn the concepts on VLSI Design, System on Chip Design, ASIC and FPGA design Flow, Digital Electronics & Verilog HDL which will be highly required to start an industry standard protocol based project.

Add on course will be of 30hours

Schedule

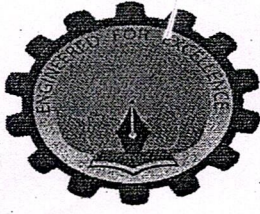| Date	Duration	Time	Topics
08/12/2022	6hr	9.30am to 4.00pm	Foundation to VLSI Design, System Design Tools and Techniques, Combinational Circuit Design Flow
09/12/2022	6hrs.	9.30am to 4.00pm	Multiplexer Design, Encoders and Decoders, Code Converters
12/12/2022	6hrs.	9.30am to 4.00pm	Latches and Flipflops, Registers Counters, Moore's machine Mealy's Machine
13/12/2022	6hrs.	9.30am to 4.00pm	Program Using Verilog, Structural Coding and Simulations, Conditional Assignments and Loops
14/12/2022	6hrs.	9.30am to 4.00pm	Introduction to FPGA, Verilog Coding for FPGA

Course Coordinator
Ms. Khushbu Tikhe

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Add on Course on Product Design and Development

Add on Course Details:

Course name: Product Design and Development

Add on Course Duration: 30 hours

Department Organizing Event: ECS, SLRTCE

Trainer Details: Trainer name: Mrs Samita Bhandari, Ms Tanvi Thakur, Ms Khushbu Tikh, Ms Rashmi Maheshwari, Mr. Vinaykumar Singh, Mrs Sunita Yadav.

Trainer's Position: Assistant professor

Topics Covered:

Student will learn the concepts

1. Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. Competence with a set of tools and methods for product design and development.
3. Confidence in your own abilities to create a new product.
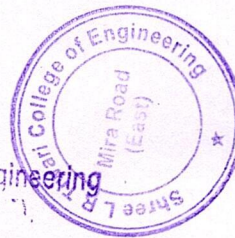4. Ability to coordinate multiple, interdisciplinary tasks in order to achieve a common objective.

Add on course will be of 30hours

Schedule

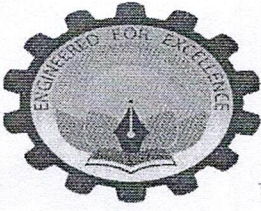| Date	Duration	Time	Topics
16/06/2023	6hr	9.30am to 4.00pm	Introduction to course, Product life-cycle, Product policy of an organization. Product design process, Product analysis. Product ideation Microsoft SQL, Orange (Data mining tool)
17/06/2023	6hrs.	9.30am to 4.00pm	Patent filling Procedure, Python for product development Game App Development, Machine Learning Application Web development/Business application
19/06/2023	6hrs.	9.30am to 4.00pm	Machine Learning Application, Web development/Business application, Six Stage to Development, Ideation, Problem Statement, Business Model Canvas, Market Research, Pitch MVP
20/06/2023	6hrs.	9.30am to 4.00pm	Hardware Product Design, 1.Hardware Product Design 2. Hardware Product Development tool
21/06/2023	6hrs.	9.30am to 4.00pm	Hardware Product Development tool, IPR

Course Coordinator
Ms. Khushbu Tikhe

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Add on Course on 5G Communication

Add on Course Details:

Course name: 5G Communication
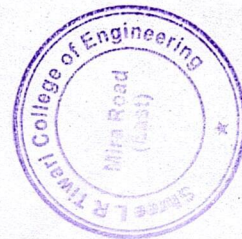
Add on Course Duration: 30 hours

Department organizing event: EXTC, SLRTCE

Trainer Details: Trainer name: Mrs. Aparna Majare
Trainer's Designation: Assistant professor

Topics Covered:

- Basics of Communication
- Concepts of Wireless communication
- Evolution of Cellular communication(1G to 4G), Comparative study of 4G & 5G
- Introduction and 3GPP standards of 5G
- 5G key enablers technologies, deployment, network architecture
- Use cases of 5G and task based training

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Day Wise Plan of Add on Course
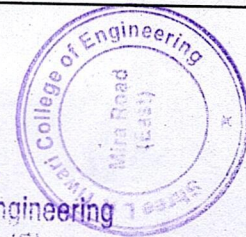
Session 1:9:30 am to 12:30 pm
Session 2:1pm to 4pm

Sr. No.	Date	Contents
1.	1/12/2022	Session 1: Basics of Communication System, Concept of Modulation Techniques. (Theory + hands on sessions)
		Session 2: Introduction of Digital Communication, Hands on practice for digital communication. (Theory + hands on sessions)
2.	2/12/2022	Session 1: Introduction of Wireless communication Multiplexing & De-multiplexing, Basic of Antennas. (Theory + hands on sessions)
		Session 2: Multi-antenna Techniques, Fundamentals of Mobile Communication. (Theory + hands on sessions)
3.	3/12/22	Session 1: Evolution of Cellular communication(1G to 4G)
		Session 2: Comparative study of 4G & 5G
4.	5/12/22	Session 1: Introduction of 5G
		Session 2: 3GPP standards of 5G
5.	6/12/22	5G key enablers technologies
6.	7/12/22	5G Deployment, network architecture , Use cases of 5G and task based training

Aparna Majare
Course Coordinator
(Name and Signature)

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Audit Course: Environmental ethics

Environmental ethics believes that humans are a part of society as well as other living creatures, which include plants and animals. These items are a very important part of the world and are considered to be a functional part of human life.

Therefore, it is essential that every human being respect and honor this and use morals and ethics when dealing with these creatures.

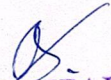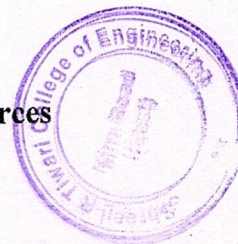| Course Code	Course Name	Teaching Scheme			Credit Assigned			
		Theory	Practical	Tutorial	Theory	TW/ Practical	Tutorial	Total
EVS	Environmental ethics	01 Hrs. /Week	--	---	NA	NA	NA	NA

Pre-requisites: NA.

Course Objectives

1. To understand the concept of environmental Ethics in Engineering.
2. To realize the significance of nature in life.
3. To indoctrinate environmental ethics education in our students so that they remain committed to professional ethics and responsibilities relevant to nature .
4. To address graduate attribute 6, 7, 8,9,10 related to professional engineering practice, sustainability, ethics, team workand communication.
5. To inculcate qualities like cooperation and team building to function effectively as an individual and as a member in teams and in multidisciplinary settings.

Course Outcomes

Apply the knowledge to conserve and nurture environmental resources

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Department of Information Technology

Syllabus

Game Asset Creation Using Blender

Objectives of Course:

1. To understand the basic concepts of gaming software.
2. To understand the concept of machine learning.
3. To understand the 3D based game modelling.

Outcome of course:

1. Students will able to learn the basic of gaming software.
2. Students will able to learn the basic concept of machine learning in gaming.
3. Students will able to create the 3D modelling for game.

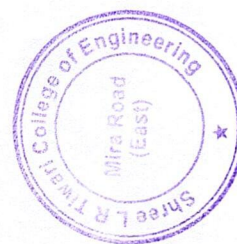| Module	syllabus	hours
1	**Introduction and overview to Blender :** Overview of Blender's interface and tools, Navigating the 3D workspace, Introduction to modeling, texturing, and rendering in Blender, Basic object creation and manipulation techniques	5
2	**Module 2: Modeling structure and modelling basic assest:** Creating basic shapes and objects, Working with vertices, edges, and faces ,Applying modifiers for efficient modeling	5
3	**Module 3: Modeling Techniques:** Subdivision surface modelling, Sculpting organic forms, Retopology for clean topology , Creating high-poly and low-poly models, UV unwrapping and efficient texture mapping	5
4	**Module 4: Materials and Texturing:** Understanding materials and shaders, Creating and editing materials in Blender, Texture painting and image manipulation, Procedural texturing using nodes, Applying textures to game assets	5
5	**Module 5: Rigging and Animation:** Introduction to rigging in Blender, Setting up armatures and bone structures, Weight painting for smooth deformation, Keyframe animation techniques, Creating animation cycles and loops	5

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| 6 | **Lighting and Rendering:** Understanding lighting principles in game asset creation, Setting up different types of lights in Blender, Adjusting light properties for desired effects, Post-processing and exporting rendered images | 5 |

M.J.Joz

Mr. Manthan Joshi

Assistant professor

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Add on Course on Game Asset Development using Blender

Add on Course Details:

Course name: web development

Add on Course Duration: 30 hours

Department Organizing event : IT, SLRTCE

Trainer Details: Trainer name: Mr. Manthan Joshi/ Mrs. Bhushana Thakur
Trainer's Position: Assistant professor

Topics Covered:

Introduction and overview of software using blender
Modeling introduction and modelling some basic assets
Low poly game character modelling
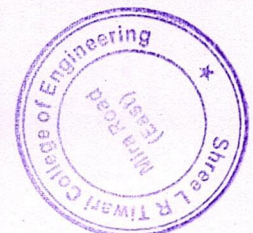Ringing and animation

Add on course will be of 30hours

Schedule

Date	Duration	Time	Topics
19/6/23	5hrs.	10 am to 12 pm, 12.45pm to 3.45pm	Introduction and overview of software
20/6/23	5hrs.	10am to 12 pm ,12.45pm to 3.45pm	Modeling introduction and modelling some basic assets
21/6/23	5hrs.	10 am to 12 pm, 12.45pm to 3.45pm	Low poly game character modelling
22/6/23	5hrs.	10am to 12 pm ,12.45pm to 3.45pm, 12.45pm to 3.45pm	Uv unwrapping and texturing
22/6/23	5hrs.	10 am to 12 pm, 12.45pm to 3.45pm	Ringing and animation
23/6/23	5hrs.	10 am to 12 pm, 12.45pm to 3.45pm	Lighting and Rendering

M.J.

Course Coordinator
(Name and Signature)

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Park, Mira Road (E).

Add on Course on Machine Learning

Add on Course Details:

Course name: Machine Learning

Add on Course Duration: 30 hours

Department Organizing event : IT, SLRTCE

Trainer Details: Trainer name: Mrs. Rupali Pashte
Trainer's Position: Assistant professor

Topics Covered:

The add-on course on Machine Learning was conducted by the Information Technology Department which focused on providing a solid foundation in Machine Learning Technology
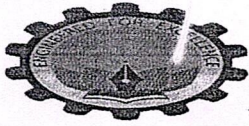
Add on course will be of 30hours

Schedule

Sr. no	Date	Timings	Topics
1	12/12/2022 (Monday)	10 a.m - 12p.m	ML terminology, Python Libraries
		1 p.m - 4 p.m	Practical Session
2	13/12/2022 (Tuesday)	10 a.m - 12 p.m	Missing data, Feature Scaling, Categorical Data, Under fitting, Overfitting, Bias, Variance, Types of Machine Learning, Classification and Regression
		1 p.m - 4 p.m	Practical Session
3	14/12/2022(Wednesday)	10 a.m - 12 p.m	Feature Selection- Filter, Wrapper, Embedded, Hybrid, Linear Regression, logistic Regression, Random Forest Algorithm

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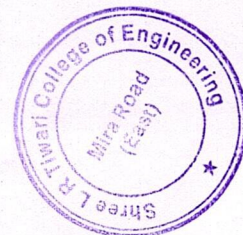Shree L. R. Tiwari College of Engineering
Kanakiya Park, Mira Road (E).

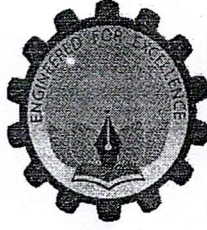|		1 p.m - 4 p.m	Practical Session
4	15/12/22 (Thursday)	10 a.m - 12 p.m	Feature Extraction- Principal Component Analysis, Singular Value Decomposition., SVM, Design Tree, Naive Bayes classification
		1 p.m - 4 p.m	Practical Session
5	16/12/22 (Friday)	10 a.m - 12 p.m	Linear Regression, Regularization, Performance Metric
		1 p.m - 4 p.m	Practical Session

Course Coordinator
(Name and Signature)

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k, Mira Road (E).

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SHREE L. R. TIWARI
COLLEGE OF ENGINEERING

(Approved by AICTE & DTE, Maharashtra State & Affiliated to University of Mumbai)
NAAC Accredited, NBA Accredited Program, ISO 9001:2015 Certified | DTE Code No. : 3423
Minority Status (Hindi Linguistic)

Add-on Course on Flutter

Add on Course Details:
Course name: Flutter Development
Add on Course Duration: 26/06/2023 to 01/07/2023
Organization: SLRTCE

Trainer Details: Trainer name: Anuj Pravin Singh, Vaibhav Nohwar, Het Anand Dave and Dhritee Dwivedi
Trainer's Position: Student
Topics Covered: Widgets in Flutter, Multi-Screen, Animation and Image Asset, Navigation between Screen, Spread Operator, Debugging in Flutter and Connecting with Backend using Firebase
Add on course will be of 30hours

Flutter Add-On Course 2023-24

Week-1 Schedule

Date	Time	Hours	Session	Topics
26/06/2023		6 hrs	Introduction to Native App Development and Dart Programming	• Native App Development • Role in Industry • Types of software • Dart Programming
27/06/2023	9:15 am to 4:45 pm	6 hrs	Setting up the environment and executing the first app	• Environment setup for App development
28/06/2023		6 hrs	Building a Multi-Screen App - 1	• Widgets in Flutter • Multi – Screen Apps • Animation and Image Asset
30/06/2023		6 hrs	Building a Multi-Screen App - 2	• Navigation between Screen • Spread operator • Data Class • Debugging in flutter
01/07/2023		6 hrs	Connecting with Backend	• Firebase Setup • Firebase Initialization • Building Basic App with Backend connectivity

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