



RV College of
Engineering[®]



RVCE

SKILL LABS

FOR SECOND YEAR



RV College of
Engineering™

DEPARTMENT OF
ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

SKILL LAB



NETWORKING & UX DESIGN

FOR SECOND YEAR STUDENTS

OVERVIEW

Improving the skills of engineering students is critical for the nation's economic development. Engineering students' adequate skills can help businesses to transform themselves structurally in the ways that are necessary to adapt to the emerging technologies. The future of skilled jobs requires attention to the labour market and to the employer needs for developing newer technologies. Training policies as per NEP 2020 for the skill development are addressed in this program. **After training, the student become an UX Designer, UI/UX Lead , UI Engineer, UI/ UX Analyst, UI/UX Specialist with the salary ranging from 3 to 15 Lakhs**

MODE OF CONDUCTION OF EACH MODULE:

- i. 2 Hours Theory, 2 Hours Demo, 3 Lab Sessions of 2.5 Hours each
- ii. Prepare for Careers / Employability options.
- iii. Develop skills for entry-level technical support roles
- iv. Prepare for Certification examination.

MODULE 1: HARDWARE & NETWORKING

Installation of Operating Systems, Introduction to Networking fundamentals, Configuring routers, configuration of users and assigning credentials to users

MODULE 3: VIRTUAL REALITY

First Person Controller, Third Person Controller, lightning, particle system, skyboxes, terrain build, app build for PC and Android

MODULE 2: VIRTUAL REALITY

Introduction to unity, working with objects, working with Scripts, Player movement, Camera Movement, Menu and UI, Advanced 3D movement

MODULE 4: UX DESIGN

Introduction to Interface Design, Guidelines for UI, Introduction to AR, Maker based AR and Marker free AR, demonstration to gain an experience of VR through dedicated hardware

STUDENT DETAILS

Name:.....

USN:.....

Branch:.....

Phone:

e-mail:

.....
Signature of Student

COORDINATORS

Dr. Vijayalakshmi M N, Dept. of AIML
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Prof. Narasimha Swamy S, Dept. of AIML
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ACCEPTANCE

In order to accept and start the training of the program, students are required to sign in the provided space. Please remember that after signatures, the proposal will be set into action by RVCE for any queries, it is advised to discuss with the appointed representatives before the signing and making it officially.

TERMS AND CONDITION

- Only students who have paid a special lab fee to the institution are eligible.
- The students must maintain 90% attendance for obtaining the skill lab certificate.
- Students must attend training as per scheduled time.



RV College of
Engineering™

DEPARTMENT OF
AEROSPACE ENGINEERING

SKILL LAB



AEROSPACE DESIGN & MODELLING LAB

FOR SECOND YEAR STUDENTS

OVERVIEW

The primary intent of the Aerospace design and modelling lab is to enhance the soft skills of the II year Aerospace Engg students. This would be resulting in higher employment rate of the Aerospace Engg students with skills pertaining to design and modelling of Aerospace Engg Components. Besides, the skill lab also focuses on enhancing the holistic personality development through soft skill training. **After training, the student would be eligible to take up jobs pertaining to product and design engineering in Aerospace Industries like Axes Cades, QUEST Global, Collins Aerospace, etc**

MODE OF CONDUCTION OF EACH MODULE:

- i. 2 Hours Theory, 2 Hours Demo, 3 Lab Sessions of 2.5 Hours each
- ii. Prepare for Careers / Employability options.
- iii. Develop skills for entry-level technical support roles
- iv. Prepare for Certification examination.

MODULE 1: HARDWARE & NETWORKING

Basics of 2D-drawing and Hands-on training in GD&T.
Industry drawings with case studies

MODULE 3: VIRTUAL REALITY

Use of data hand book for design of components, Industry standards- DGCA and MIL

MODULE 2: VIRTUAL REALITY

3D modeling concepts, Understand and use viewpoint and UCS, Wireframe modelling, Solid modelling, Mesh modeling, Surface modeling Create & manage 2D views from 3D models, Materials, Working with images

MODULE 4: UX DESIGN

Training on behavioural attributes, Management skills: communication

STUDENT DETAILS

Name:.....

USN:.....

Phone:

Branch:.....

e-mail:.....

.....
Signature of Student

COORDINATORS

Prof Benjamin Rohit
Prof Jitendra Singh

Prof Mukesh M

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RV College of
Engineering™

DEPARTMENT OF
BIOTECHNOLOGY

SKILL LAB



INDUSTRIAL BIOTECHNOLOGY

FOR SECOND YEAR STUDENTS

OVERVIEW

Skill based education and vocational training for engineering students is key for the global economic development. Engineering students' adequate skills can help them to transform themselves structurally in the ways that are necessary to adapt to the emerging technologies. The future of skilled jobs requires attention to the labour market and to the employer needs for developing newer technologies. Training policies as per NEP 2020 for the skill development are addressed. **After the completion of the course, students finds the avenues in diagnostics, forensics, genetic engineering, analytical lab, Food and allied industries, Pharmaceutical and cosmetics.**

MODE OF CONDUCTION OF EACH MODULE:

- i. 2 Hours Theory, 2 Hours Demo, 3 Lab Sessions of 2.5 Hours each
- ii. Prepare for Careers / Employability options.
- iii. Develop skills for entry-level technical support roles
- iv. Prepare for Certification examination.

MODULE 1: INTRODUCTION

Sample preparation and Characterization of Biological samples Spectrometry, microscopic and Chromatographical techniques

MODULE 2: WQTER

Immunodiffusion techniques and Immunoassay. Isolation of proteins, Purification and ELISA techniques

MODULE 3: CHARACTERISTICS OF SEWAGE

Soil analysis; NPK ratio, pesticide estimation, Toxicity assessment of the food samples according to ISO standards

MODULE 4: SLUDGE MANAGEMENT

Inferential statistics using Microsoft Excel/ SPSS

STUDENT DETAILS

Name:.....

USN:.....

Phone:

Branch:.....

e-mail:

.....
Signature of Student

COORDINATORS

Dr. Nagashree N Rao, Associate Professor, Department of Biotechnology, nagashreenrao@rvce.edu.in 6360962828

Faculty members: Dr Ashwani Sharma & Dr Shivandappa

ACCEPTANCE

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RV College of
Engineering™

DEPARTMENT OF
CHEMICAL ENGINEERING

SKILL LAB



SEWAGE TREATMENT PLANT

FOR SECOND YEAR STUDENTS

OVERVIEW

RV College Engineering Improving the skills of engineering students is critical for the nation's economic development. Adequate Skills in engineering students can help businesses to transform themselves structurally in the ways that are necessary to adapt to the emerging technologies. The future of skilled jobs require attention to the labor market and to the employer needs for developing newer technologies. Training policies as per NEP 2020 for the skill development are addressed in this program. **The participants would get a holistic exposure to in-depth knowledge, and exposure of sewage treatment technologies. Enhance the participant's analytical and trouble-shooting skills. Hence, the student can find employment in maintenance of sewage treatment plant**

MODE OF CONDUCTION OF EACH MODULE:

- i. 2 Hours Theory, 2 Hours Demo, 3 Lab Sessions of 2.5 Hours each
- ii. Prepare for Careers / Employability options.
- iii. Develop skills for entry-level technical support roles
- iv. Prepare for Certification examination.

MODULE 1: INTRODUCTION

Definitions, Sources of Sewage, Sewage Discharge, Effect of Untreated, Wastewater Disposal

MODULE 3: CHARACTERISTICS OF SEWAGE

Temperature, pH, Color, Odor and Solids; Nitrogen, Phosphates and Chlorides, Organic Matter

MODULE 2: WATER QUALITY AND ESTIMATION OF ORGANIC CONTENT

Biochemical Oxygen Demand (BOD)
Chemical Oxygen Demand (COD)

MODULE 4: SLUDGE MANAGEMENT

Thickening, Dewatering and Anaerobic Digestion

STUDENT DETAILS

Name:.....

USN:.....

Phone:

Branch:.....

e-mail:

.....
Signature of Student

COORDINATORS

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ACCEPTANCE

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RV College of
Engineering™

DEPARTMENT OF
COMPUTER SCIENCE & ENGINEERING

SKILL LAB



NETWORKING ESSENTIALS

FOR SECOND YEAR STUDENTS

OVERVIEW

Networking Essentials teaches networking based on environments students may encounter in daily life, including small office and home office networking. This course provides an engaging, self-paced learning experience using Packet Tracer simulation, interactive activities, and learning with your own devices and setting up networks. **A launching point for many career pathways, from cybersecurity to software to business and more, Prepare for CCNA certification exam, pursue careers for L1,2 level IT support Jobs.**

MODE OF CONDUCTION OF EACH MODULE:

- i. 2 Hours Theory, 2 Hours Demo, 3 Lab Sessions of 2.5 Hours each
- ii. Prepare for Careers / Employability options.
- iii. Develop skills for entry-level technical support roles
- iv. Prepare for Certification examination.

MODULE 1: COMMUNICATIONS IN A CONNECTED WORLD

Network Types, Network Types, Bandwidth and Throughput, Clients and Servers, Network Components, Online Connections: LAN, Wireless Networks, Network Documentation, Communication Principles: The Rules, Communication Standards, Network Communication Models, Ethernet, Encapsulation and the Ethernet Frame, Hierarchical Network Design

MODULE 3: EXPLORE NETWORKS WITH PACKET

Tracer, Packet Tracer Network Simulator, Packet Tracer Installation, The Packet Tracer User Interface, Packet Tracer Network Configuration, Build a Simple Network, Ethernet Cabling, Coaxial and Fiber-Optic Cabling, Twisted-Pair Operation, Verify Connectivity

MODULE 2: SWITCHING, ROUTING, AND WIRELESS ESSENTIALS

Network Devices (Basic network devices like Network interface cards, repeaters, bridges and hubs, switches, wireless Access points, Routers), Network cables - Network tools; copper cables and connectors, coaxial cables, twisted pairs, build and test a network cable, Switching technologies and router operations that support small-to-medium business networks and includes wireless local area networks (WLAN) and security concepts, Mobile Device Connectivity

MODULE 4: ENTERPRISE NETWORKING, SECURITY, AND BUILD A HOME NETWORK

Covers the architecture, security, and operation of an enterprise network, along with introducing the new ways in which network engineers interact with programmable infrastructure, Routing Table, DHCP, DNS, FTP, HTTP, Telnet, SSH Protocols, Email & Messaging Protocols, Firewall, Network Security, Troubleshoot Common Network Problems

STUDENT DETAILS

Name:

USN:

Phone:

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.....
Signature of Student

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RV College of
Engineering™

DEPARTMENT OF
CIVIL ENGINEERING

SKILL LAB



BASIC FABRICATION AND SERVICE

FOR SECOND YEAR STUDENTS

OVERVIEW

Improving the skills of engineering students is critical for the nation's economic development. Adequate Skills in engineering student's adequate skills can help businesses to transform themselves structurally in the ways that are necessary to adapt to the emerging technologies. The future of skilled jobs require attention to the labor market and to the employer needs for developing newer technologies. Training policies as per NEP 2020 for the skill development are addressed in this program. **After training, the student can find employment in the area of building services, area calculations and property tax calculations. Supervision based employment in building repair/services civil and chemical laboratories**

MODE OF CONDUCTION OF EACH MODULE:

- i. 2 Hours Theory, 2 Hours Demo, 3 Lab Sessions of 2.5 Hours each
- ii. Prepare for Careers / Employability options.
- iii. Develop skills for entry-level technical support roles
- iv. Prepare for Certification examination.

MODULE 1: INTRODUCTION

Marking of Centerline for Infrastructure Projects: Roadway, Carriage way, Shoulder Drainage, Pipe lines sewer lines

MODULE 2: WQTER

Materials for construction Handling, storage, and treatment Masonry Construction- arches, Reinforced and unreinforced, Shuttering & Formwork.

MODULE 3: CHARACTERISTICS OF SEWAGE

Marking of centerline for Buildings (Residential/commercial & Public).

MODULE 4: SLUDGE MANAGEMENT

Inferential statistics using Microsoft Excel/ SPSS

STUDENT DETAILS

Name:.....

USN:.....

Branch:.....

Phone:

e-mail:

.....
Signature of Student

COORDINATORS

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RV College of
Engineering™

DEPARTMENT OF
ELECTRONICS AND COMMUNICATION

SKILL LAB



**DESIGN AND DEVELOPMENT
OF PRINTED CIRCUIT BOARDS**

FOR SECOND YEAR STUDENTS

OVERVIEW

Engineering skills encompass the ability to use the insights, to conceive, model and scale an appropriate solution to a problem. With the development of more complex technologies, there has been an increasing need for new approaches to engineering education. Engineering students' adequate skills can help businesses to transform themselves structurally in the ways that are necessary to adapt to the emerging technologies. Laboratory courses are essential in skills and knowledge for all engineering programs. **After the completion of Skill Lab training, the candidate may get places as an IT Technical support engineer, Test Automation Engineer, QC Inspection Engineer and Service Desk Advisor.**

MODE OF CONDUCTION OF EACH MODULE:

- i. 2 Hours Theory, 2 Hours Demo, 3 Lab Sessions of 2.5 Hours each
- ii. Prepare for Careers / Employability options.
- iii. Develop skills for entry-level technical support roles
- iv. Prepare for Certification examination.

MODULE 1: CIRCUIT DESIGN

Circuit design and optimization for PCB fabrication. Design of custom library and Component Selection.

MODULE 2: LAYOUT DESIGN

Layout Design Guidelines for single/multi layer PCB, Component placement and Routing Guidelines for single/multi layer PCB and Manufacturing Process.

MODULE 3: SINGLE/MULTILAYER PCB DESIGN

Introduction to PCB Design, Schematic design, Symbol design, Footprint design and Library Management.

MODULE 4: CASE STUDY

Design a PCB for particular application, generating gerber file, Build and test the functionality of the design. Visit to a PCB Fabrication Plant.

STUDENT DETAILS

Name:.....

USN:.....

Phone:

Branch:.....

e-mail:.....

.....
Signature of Student

COORDINATORS

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Prof. Arunkumar P Chavan, ECE Dept., RVCE
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RV College of
Engineering™

DEPARTMENT OF
ELECTRICAL AND ELECTRONICS ENGINEERING

SKILL LAB



**ELECTRICAL CIRCUITS AND
ELECTRICAL MACHINES**

FOR SECOND YEAR STUDENTS

OVERVIEW

Skills are most demanded and perishable resource in all sectors of life. Engineering skills encompass the ability to use the insights, to conceive, model and scale an appropriate solution to a problem. In the era of rapid changes and fierce competition, efforts to learn new things and acquire certain skills not only make students confident and self-assured, but also give them an advantage in the career building. Laboratory courses are essential in skills and knowledge for all engineering programs. Training policies as per NEP 2020 for the skill development are addressed in this program. **After the completion of Skill Lab training, the candidate may enter into Electrical, Electronics Industries, Start their own service centers for servicing and installation of Electrical Machines.**

MODE OF CONDUCTION OF EACH MODULE:

- i. 2 Hours Theory, 2 Hours Demo, 3 Lab Sessions of 2.5 Hours each
- ii. Prepare for Careers / Employability options.
- iii. Develop skills for entry-level technical support roles
- iv. Prepare for Certification examination.

MODULE 1: UNDERSTAND THE PERFORMANCE OF SWITCH GEAR EQUIPMENTS.

Skill development in the usage of switch gear equipments in Electrical Circuits such as fuses, MCB, Grounding and usages of Rheostats:

MODULE 2: UNDERSTAND BASIC OPERATION OF DC MACHINES

Understand the working of parts of DC Machines such as yoke, field windings, armature winding, brushes and shaft.

MODULE 3: UNDERSTAND BASIC OPERATION OF AC MACHINES

Basic Experiment on AC Electrical Machines OC and SC test on single phase Transformers, capacitor start single phase induction motor, single/multi layer PCB and Manufacturing Process.

MODULE 4: VIRTUAL LAB

Load test on self and separately excited generator. Measurement of line and phase values of current and voltage in three phase circuits.

STUDENT DETAILS

Name:

USN:

Phone:

Branch:

e-mail:

.....
Signature of Student

COORDINATORS

Dr.ChayapathyV, Asso.Prof., EEE Dept.,
RVCE. E-mail: chayapathyv@rvce.edu.in, M: 7899638568

Dr. G. S.Anitha, Asso. Prof., EEE Dept., RVCE
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RV College of
Engineering™

DEPARTMENT OF
ELECTRONICS AND INSTRUMENTATION ENGINEERING

SKILL LAB



PCB DESIGN AND TESTING

FOR SECOND YEAR STUDENTS

OVERVIEW

Skills are most demanded and perishable resource in all sectors of life. Engineering skills encompass the ability to use the insights, to conceive, model and scale an appropriate solution to a problem. In the era of rapid changes and fierce competition, efforts to learn new things and acquire certain skills not only make students confident and self-assured, but also give them an advantage in the career building. Laboratory courses are essential in skills and knowledge for all engineering programs. Training policies as per NEP 2020 for the skill development are addressed in this program. **After the completion of Skill Lab training, the candidate may be able to do PCB design of electronic circuit, Components mounting on designed PCB, Test the PCB board**

MODE OF CONDUCTION OF EACH MODULE:

- i. 2 Hours Theory, 2 Hours Demo, 3 Lab Sessions of 2.5 Hours each
- ii. Prepare for Careers / Employability options.
- iii. Develop skills for entry-level technical support roles
- iv. Prepare for Certification examination.

MODULE 1: PCB DESIGN OF SPECIFIC CIRCUITS USING SOFTWARE

- Design Rules
- Layout Designs
- Circuit Placement on PCB

MODULE 2: UNDERSTAND BASIC OPERATION OF DC MACHINES (SPECIFIC CIRCUITS)

- Component placement rules
- Placement of components on the board
- Soldering of components
- Testing of designed PCB board

MODULE 3: PCB DESIGN OF DIFFERENT CIRCUITS (STUDENT CHOICE) USING SOFTWARE

- Design Rules
- Layout Designs
- Circuit Placement on PCB

MODULE 4: COMPONENTS MOUNTING ON DESIGNED PCB (STUDENT CHOICE CIRCUIT)

- Component placement rules
- Placement of components on the board
- Soldering of components

STUDENT DETAILS

Name:.....

USN:

Phone:

Branch:.....

e-mail:

.....
Signature of Student

COORDINATORS

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RV College of
Engineering™

DEPARTMENT OF
ELECTRONICS AND TELECOMMUNICATION ENGINEERING

SKILL LAB



PCB DESIGN AND TESTING

FOR SECOND YEAR STUDENTS

OVERVIEW

Skills are most demanded and perishable resource in all sectors of life. Engineering skills encompass the ability to use the insights, to conceive, model and scale an appropriate solution to a problem. In the era of rapid changes and fierce competition, efforts to learn new things and acquire certain skills not only make students confident and self-assured, but also give them an advantage in the career building. Laboratory courses are essential in skills and knowledge for all engineering programs. Training policies as per NEP 2020 for the skill development are addressed in this program. **After the completion of Skill Lab training, the candidate may work in clerical job for industries, technicians for media, network technicians for IT industries.**

MODE OF CONDUCTION OF EACH MODULE:

- i. 2 Hours Theory, 2 Hours Demo, 3 Lab Sessions of 2.5 Hours each
- ii. Prepare for Careers / Employability options.
- iii. Develop skills for entry-level technical support roles
- iv. Prepare for Certification examination.

MODULE 1: UNDERSTANDING RULES AND REGULATIONS DECLARED BY TRAI

Interconnection issues (usage charges, agreement, revenues sharing). Quality of the telecom services. Consumer protection and redressal of grievance including unsolicited commercial communication.

MODULE 2: WORKING WITH MS EXCEL

The broad benefits of learning Excel for students include faster and more accurate decision-making, quick calculations and seamless data visualization

MODULE 3: MULTIMEDIA EDITING

It covers the creation and manipulation of digital audio-visual files such as image files, audio files and video files.

MODULE 4: DESIGN OF LAN FOR A WORKPLACE

The four main factors, which would be emphasized, are Cost efficiency, Installed base, Maintainability and Performance.

STUDENT DETAILS

Name:.....

USN:.....

Phone:.....

Branch:.....

e-mail:.....

COORDINATORS

Prof. Mithun T P, Asst. Prof., ETE Dept., RVCE
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.....
Signature of Student

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RV College of
Engineering™

DEPARTMENT OF
INFORMATION SCIENCE & ENGINEERING

SKILL LAB



**ADVANCES IN COMPUTING HARDWARE
MULTI-CORE PROCESSORS**

FOR SECOND YEAR STUDENTS

OVERVIEW

Students apply skills to configure and interface microcontrollers. Hands-on learning of IoT kits for developing prototypes for various applications like agriculture, home automation and traffic monitoring. Learn and apply the parallel programming constructs on both CPU and GPU for code optimization. **After this course the students will be able to work as Entry level Embedded Software Programmer, Technical Hardware Associate, HPC Cluster Administrator, Distributed Systems Analyst, Assistant System Engineer.**

MODE OF CONDUCTION OF EACH MODULE:

- i. Demonstration using hardware kits followed by hands-on practice
- ii. sessions.
- iii. Parallel Programming introduction with different models targeted
- iv. specifically to multicore and many core processors.

MODULE 2: HANDS -ON IOT- 6 HRS

- Working with Arduino and Raspberry Pi.
- Working with Cloud platform.
- Designing and Building IoT Applications.

MODULE 4: MESSAGE PASSING INTERFACE - 6 HRS

- Principles of MPI Programming
- Building Blocks, MPI
- Overlapping Communication with computation
- Collective Communication and computation operations, Groups and Communicators

MODULE 1: MICROCONTROLLERS - 6 HRS

- Digital and Analog Interfacing
- Interfacing LEDs
- Switches and Prototyping

MODULE 3: MULTI-CORE PROGRAMMING - 6 HRS

- Basic OpenMP constructs & functions
- More OpenMP constructs & functions
- Linear Algebra using OpenMP tasks
- Critical Sections
- Locks and Matrix Factorization using OpenMP

MODULE 5: PROTOTYPING - 6 HRS

- Air and Water Pollution Monitoring System
- Vehicle Number Plate Recognition
- Gesture recognition
- Home automation, Smart Parking

STUDENT DETAILS

Name:.....

USN:.....

Phone:.....

Branch:.....

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COORDINATORS

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Signature of Student

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RV College of Engineering[®]
Autonomous Institution Affiliated to Vellore Institute of Technology, Vellore

Approved by AICTE, New Delhi
MECHANICAL ENGINEERING DEPARTMENT

Department of Mechanical Engineering

INDUSTRY BASED SPECIAL SKILL TRAINING

IV Semester

29 May – 9 June 2023



	Module - 1		Module - 2		Module - 3	
	Week-1	Week-2	Week-1	Week-2	Week-1	Week-2
	FANUC Automation and Robotics	Bosch Rexroth Hydraulics & Pneumatics	Toyota Automotive Mechatronics	Morris Garages EV Technology	Dassault Systemes 3D Experience	OR Lasers / Pramaan Lasers and 3DP
Inauguration						
Day-1	Components of robot system	Components of Hydraulic and Pneumatic system	Introduction Feel & Experience of working models	EV safety tools, features of MG-ZS EV	Sketching	Laser with optical microscopy -01
Day-2	Operating Robot teach pendant	Design of Hydraulic system	Nomenclature & Engine Overhaul	Basics of Electrics Electronics	Part Design	Laser with optical microscopy -02
Day-3	Teaching / Programming robot	Design of Pneumatic system	Mechatronics subsystems	Energy storage & BMS	Part Design and Drafting	3D Printing-01
Day-4	CNC turning, milling programming	Analysis of circuits	Fault analysis and diagnosis	Communication controller	Assembly Design	3D Printing-02
Day-5	Programming using FANUC Simulator	Simulation USING automation studio	Expert lecture by industry personnel	Control & Wiring diagram	Surface Design	Polymer composites
Assessment & Valedictory						
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