



Einstein Academy of Technology and Management

(Managed by Udayanath Educational & Charitable Trust, Bhubaneswar)
Approved by AICTE, Govt. of India, New Delhi & Affiliated to BPUT, Govt. of Odisha
An ISO:2015 Certified Degree Engineering College

Supporting Document for Quantitative Metric 1.2.1

1.2.1 Number of Certificate/Value added courses offered and online courses of MOOCs, SWAYAM, NPTEL etc. where the students of the institution have enrolled and successfully completed during the last five years)

Add on Courses and their Syllabi Department Wise

CE-CSE-ECE-EE-EEE-ME-MBA



Einstein Academy of Technology and Management
Baniatangi, Bajapur, Khurda-752060
Department of Civil Engineering

SUMMARY REPORT

NAME OF THE COURSE: TOTAL STATION

BRANCH: CIVIL ENGG. SEMESTER: 4thYear DURATION: 44 hours

NAME OF THE TRAINER: Prof. Radheshyam Hota

COURSE OUTCOMES:

CO-1: Understand the Basic surveying instruments and techniques.

CO-2: Understand the skills in using basic surveying instruments and analyze data.

CO-3: Define the advantage and disadvantage of Total Station surveying.

CO-4: Define the vertical and horizontal angle measurement mechanism of Total Station instrument.

CO-5: Use total station in the field of civil engineering land survey.

CO-6: Apply the knowledge of levelling in different operations in civil engineering projects.

Sl. No.	Topic covered	No. of hours
1	Classifications and basic principles of surveying, Equipment and accessories used in surveying	2
2	Introduced to basic principles of Total Stations, Level Machines and GPS on field demonstration	2
3	introduction to Topcon GTS 1002 total station, Powering on the total station	2
4	powering on the total station, getting started with the names and functions of a total station parts.	2
5	the accessories of the total station. On field demonstration, theoretical background to the basic distance, angle and coordinate measurements On field demonstration.	2
6	Methods of measuring distance, basic principles of total station, historical development of total station	2
7	classifications, applications and comparison with conventional surveying, setting –up and operating a Total Station	2
8	The initial total station setup; Total station modes (i) Angle mode (ii) Distance mode; Review of Assignmentsiii)Coordinate mode (iv) Offset mode; (v) Carrying out measurements... On field demonstration	2
9	Surveying (Field Data Collection): Field data collection; surveying; staking out, resection method; file management; importing and exporting data	2
10	Area (projection and roadway); downloading data and processing it in AutoCAD Civil 3D and GIS (Data processing in lab), Plotting and levelling the contours; map layout.	2
11	Map production; working with surfaces, applications of top data in drainage systems (Data processing in lab)	2
12	Total Station Errors (Types of Errors & Adjustment): Types of survey/total station errors, – angular errors, distance errors; coordinate errors; adjusting index error;	2
13	adjustment and corrections; total station config; COGO; on field,	2

	Accuracy & errors • Topographic survey • Control & offset survey • Contour survey	
14	Building marking • Angle & distance measurement. Calculation of area. Measurement of volume. Road survey	2
15	Spot level • Distance measurement, Field procedure using co-ordinates	2
16	Data extraction from total station • Data importing using Auto-cad, Introduction to coordinate and how to set new-station from a base line.	2
17	Using known stations, and back site for orientations	2
18	Known of traverse • Preforming close traverse • Preforming open traverse • Establishing Bench Marks (BM) • Understanding level	2
19	Preforming traverse level • Finding errors and adjusting errors, Understanding GPS, Taking Points, GPS tracking	2
20	Downloading GPS points and tracks • Checking Points in Google earth	2
21	Organizing points • Changing points coordinate system (E, N to Lat, long or Decimal degree) using software • Creating Points map using GIS and Civil 3D	2
22	Road topography • Cross section topography • Drainage topography • As build topography • Downloading data • Checking points • Importing Points in Civil 3D • Creating points map	2

	Reference Book	
1	Advanced Surveying: Total Station, GIS and Remote Sensing by S. Gopi, R. Sathikumar, N Madhu, PEARSON Publication	
2	Surveying: Vol. II. and III by Dr. B. C. Punmia: Laxmi Publication – New Delhi.	
3	Remote sensing and Geographical Information System, By A. M. Chandra and S. K. Ghosh, Narosa Publishing House.	

Text Books

2. Text book of Surveying by C Venktaramaiah, university press.


Principal
Einstein Academy of Technology & Management
Bhubaneswar, Khurda


Course Coordinator



Einstein Academy of Technology and Management
Baniatangi, Bajapur, Khurda-752060
Department of Civil Engineering

SUMMARY REPORT

NAME OF THE COURSE: STAAD PRO

BRANCH: CIVIL ENGG. SEMESTER: 3rdYear DURATION: 40 hours

NAME OF THE TRAINER: Prof. Jagannath Malik

COURSE OUTCOMES:

CO-1: Students will be able to model (2D & 3D) Building using Staad pro.

CO-2: Students will be able to designs buildings under earthquake loads.

CO-3: Students will be able to use of software Staad.pro.

CO-4: Students will be able to estimate the wind load on building structures and design using software Staad.pro.

CO-5: Students will be able to analysis Integrated Design and Finite Element Analysis.

CO-6: Students will be able to estimate Structural Modelling, Designing and Analysis.

Sl. No.	Topic covered	No. of hours
1	Introduction to structural engineering: Structure, types of structures, basic definitions	2
2	Idealization of structures About STAAD-Pro: Features, hardware requirements	2
3	STAAD-Pro screen organization, GUI overview, Unit systems, Introduction to STAAD editormodel Generation: Concept of Pre-Processor, Analysis Engine, Post Processor; Creating a new file	2
4	Creating nodes, adding beam, plate, solid, enhanced grid tool (linear, radial, irregular), Geometry beam page Task:	2
5	Geometry Operations: Insert Node in existing member, adding beams, selecting members, Renumbering, how to create Beam /Column & Curved Beams, Add Mid points	2
6	Cut Section, Stretch /Split BEAMS, Different Viewing Controls for Structure, Material Specifications: Material Table, Modulus of elasticity,	2
7	Efficient of thermal expansion, damping ratio; Member Offset Loading: Load commands, Self-weight,Nodal load, Member load- concentrated force or moment, linear varying, trapezoidal	2
8	Concentrated force, Trapezoidal, hydrostatic Analysis	2
9	Perform analysis, run analysis Task, Analysis of beams with different end conditions	2
10	Various types of loading, Analysis of a structure:Perform analysis	2
11	Weight density ratio, Load Cases, Primary Load menu	2
12	Model generation using grid tool, Design parameters	2
13	Pre analysis print, Concrete Design: Beam design	2
14	Column design, Selecting and defining parameters	2
15	Assigning, end concrete design, Introduction to FEM Modelling in STAAD-Pro	2

16	Geometry, Adding plate	2
17	Create infill plates, Generate surface meshing,	2
18	Post analysis print, Generate plate mesh	2
19	Plate thickness Loading: Pressure on full plate	2
20	Concentrated load, Partial pressure on plate load Slab, Design: Two-way slab	2



Course Coordinator



Principal
Einstein Academy of Technology & Management
Bhubaneswar, Khurda



Einstein Academy of Technology and Management
Baniatangi, Bajapur, Khurda-752060
Department of Civil Engineering

SUMMARY REPORT

NAME OF THE COURSE: AUTO-CAD

BRANCH: CIVIL ENGG.

SEMESTER: 2ND Year

DURATION: 40 hours

NAME OF THE TRAINER: Prof. Kunal Pradhan

COURSE OUTCOMES:

CO-1: To understand the design and planning aspects, develop design

CO-2: Learn the details of the requirements of building components with predominance

CO-3: To Understanding the functional and structural requirements

CO-4: TO Design principles and designing of building components.

CO-5: Understand the Auto CAD environment by creating new drawings, opening existing drawings and saving drawings.

CO-6: Work with layers and line types by creating, managing, and altering the display of colour, layers, and line types and line weights in a drawing

Sl. No.	Topic covered	No. of hours
1	Introduction Principle of drafting, Terminology, & fundamentals	2
2	Size & shape descriptions, Geometric Construction	2
3	Views- Plan views, Auxiliary views, Section Views, Practice on drawing basics Geometrical Drawing	2
4	Practice, Making plan of Projection, Creation Multi-view Orthographic, projection	2
5	Projection, Method of Projection, Projection Techniques, CADD	2
6	Drafting views in First angle & third angle Projection, Creating Auxiliary views& Sections	2
7	Freehand Sketching, Representing Standard base 2D drafting	2
8	Introduction of CADD (Computer Aided Drafting & Designing), Function keys, Shortcut keys	2
9	Different sizes of paper. Application of CADD, Automatic Drafting	2
10	Geometric Modelling, Wire frame Modelling	2
11	Surface Modelling, and Solid Modelling, Drawing Elementary CADD command	2
12	Line, Polyline, Polygon, Circle, Polyline, arc, ellipse, Text Single Text, Multi-text, D-text.	2
13	Modifying Elementary Commands – Erase, Move, Copy, Mirror, Offset, Scale, Stretch, Chamfer, fillet & explode, Making layers, line type & Line weight	2
14	CADD Application & its feature, Introduction to Standard based 2D drafting (Based on International standard for representation & conformation)	2
15	Different menus of Auto-Cad, Function keys, Shortcut keys, Paper size. Making Title Block,	2

16	Writing it & inserting it in any drawing file with scale, angle & explode options, Creating a new template file (. Dwt file) & applying it to every drawing file.	2
17	Drafting of building plan, Elevation, Section Views, Applying dimensions to various views by using dimension style.	2
18	Creating Revolved, Ruled, and Tabulated & Edge surfaces.	2
19	Creating Isometric drawing with the Iso-plane (Left, Top & Right Plane	2
20	Shaded it from visual style. Making Solid Model, Box, Poly-solid, M Cylinder, Cone, Pyramid, Wedge	2

	Reference Books	
1	AUTOCAD 2018 Instructor by Shawna D. lockhart	
2	Autodesk AutoCAD Certified User Study Guide, By Daniel John Stine AIA, IES, CSI, CDT, Well AP, William G. Wyatt Ed.D., CET	
3	Introduction to AutoCAD for Civil Engineering Applications By Nighat Yasmin	



Course Coordinator


Principal
Einstein Academy of Technology & Management
Bhubaneswar, Khurda



Einstein Academy of Technology and Management
Baniatangi, Bajapur, Khurda-752060
Department of Civil Engineering

SUMMARY REPORT

NAME OF THE COURSE: TOWN PLANNING

BRANCH: CIVIL ENGG. YEAR : 4th Year DURATION: 40 hours

NAME OF THE TRAINER: Prof. (Dr.) Harish K

COURSE OUTCOMES:

CO-1: Understand and will gain the fundamental knowledge of architecture design and its basic principles.

CO-2 To apply visual and formal analysis of architecture in their mind and they will be able to appreciate well-designed buildings.

CO-3: Understand the skill required to interrupt a work of architecture and to evaluate, identify, analyze artistic expression of architectural forms.

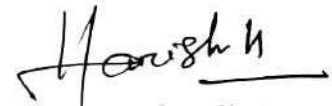
CO-4: Understand the relationship between human activities of space.

CO-5: To develop healthy, attractive and efficient environment in the city.

CO-6: Understand the architecture and town planning.

Sl. No.	Topic covered	No. of hours
1	City planning; Introduction	2
2	Evolution of cities, Principles of city planning; types of cities & new towns	2
3	Planning regulations and building byelaws, Eco-city concept; sustainable development.	2
4	Concept of housing; neighbourhoods' concept, Site planning principles	2
5	Housing typology, Housing standards	2
6	Housing infrastructure, Housing policies	2
7	Finance and management,	2
8	Principles of landscape design and site planning	2
9	Greek periods, Roman periods	2
10	Mughal periods Medieval and renaissance periods	2
11	Medieval and renaissance periods	2
12	Construction and architectural styles	2
13	Vernacular and traditional architecture	2
14	Development of Contemporary Architecture	2
15	Architectural concept, Architectural developments	2
16	Impacts on society since industrial revolution	2
17	Influence of modern art on architecture	2
18	Works of national architects, Works of architects international	2
19	International styles, Post modernism	2
20	Deconstruction in architecture	2

Reference Books		
1.	Tow planning book by S.C. Rangawala, Charotar publication.	
2.	The Great Ages of World Architecture (with Introduction to Landscape Architecture), by Sharmin Khan, Dhantpat Rai Publication.	


Course Coordinator


Principal
Einstein Academy of Technology & Management
Bhubaneswar, Khurda



Einstein Academy of Technology and Management
Baniatangi, Bajapur, Khurda-752060
Department of Civil Engineering

SUMMARY REPORT

NAME OF THE COURSE: REVIT

BRANCH: CIVIL ENGG.

YEAR: 3rd Year

DURATION: 42 hours

NAME OF THE TRAINER: Prof. Bishal Kumar Das

COURSE OUTCOMES:

CO-1: Understand building information modelling methodology and its benefits.

CO-2 Use different parts of the Revit Architecture user interface and work with different types of architectural elements and families.

CO-3: Use the different views listed in the Project Browser, control the visibility and graphical

CO-4: Understand to capture and analyze concepts, and maintain your vision through design, documentation, and construction.

CO-5: Understand the fundamental features of Revit Architecture

CO-6: Understand the presentation tools for presenting models

Sl. No.	Topic covered	No. of hours
1	Introduction to Revit	2
2	Building Information Modelling, Revit Architecture	2
3	Basic Drawing and Modify Tools	2
4	Drawing Aids • Project Units • Listening and Temporary Dimensions • Levels, Walls o Wall Properties o Arc Walls o Creating a wall element type	2
5	Editing Commands, Working with Doors and Windows, Working with Views	2
6	Working with Curtain Walls, Working with Views	2
7	Adding Components, Modelling Floors, Modelling Ceilings	2
8	Modelling Roofs, Modelling Stairs, Railings, and Ramps	2
9	Creating Construction Documents, Annotating Construction Documents, Adding Tags and Schedules, Creating Details	2
10	Massing o Introduction o Creating In-Place Masses using Forms • Extrusion , Revolve • Sweeps • Loft, Modifying Forms	2
11	Text & Tag • Callout views • Creating Details, Schedules, Introduction, Creating Schedule and Quantities, Rooms	2
12	Areas o Area Schemes o Area Plans o Area Boundaries o Area Tags o Colour Schemes, Structural Modelling	2
13	Sheet o Title Block o Adding a Sheet o Adding Views to a Sheet o Modifying a View on a Sheet o Creating a Title Sheet • Printing	2
14	Lights • Rendering • Walkthrough • Solar Studies, Site Design	2
15	Working in a Team, Introduction, Work sets, Working with Linked Models	2
16	Materials • Decal • Interference Checking • Customizing Project Settings, Fill Patterns o Line Styles and Line Weights o Line Patterns	2
17	In-Place Families, Family Creation, creating a Sliding Window	2

	Family, Creating Arch Window Family	
18	Family Creation, Creating a New Furniture Family, Staircase Customization	2
19	User Interface Enhancements, Graphics Enhancements, Updates in Massing, Updates in Material, Sheet Enhancements, Floor Enhancements, Sun Path Analysis, Background Images in Rendering	2
20	Family Creation with Adaptive Components • Curtain Panel Pattern 1 • Curtain Panel Pattern 2 • Create a Helix	2
21	Family Creation with Adaptive Components • Grill Design • Net Design o Family Editor Enhancements • Reporting Parameter	2
	Text Books	
1	Residential Design Using Autodesk Revit by Daniel John Stine AIA, IES, CSI, CDT, Well AP	
2	Autodesk Revit Structure Fundamentals by ASCENT	


Principal
 Einstein Academy of Technology & Management
 Bhubaneswar, Khurda


Course Coordinator



Einstein Academy of Technology and Management
Baniatangi, Bajapur, Khurda-752060
Department of Civil Engineering

SUMMARY REPORT

NAME OF THE COURSE: AUTO-CAD

BRANCH: CIVIL ENGG.

YEAR: 2ND Year

DURATION: 40 hours

NAME OF THE TRAINER: Prof. Radheshyam Hota

COURSE OUTCOMES:

CO-1: To understand the design and planning aspects, develop design

CO-2: Learn the details of the requirements of building components with predominance

CO-3: To Understanding the functional and structural requirements

CO-4: TO Design principles and designing of building components.

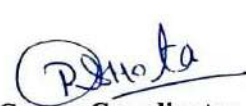
CO-5: Understand the Auto CAD environment by creating new drawings, opening existing drawings and saving drawings.

CO-6: Work with layers and line types by creating, managing, and altering the display of colour, layers, and line types and line weights in a drawing

Sl. No.	Topic covered	No. of hours
1	Introduction Principle of drafting, Terminology, & fundamentals	2
2	Size & shape descriptions, Geometric Construction	2
3	Views- Plan views, Auxiliary views, Section Views, Practice on drawing basics Geometrical Drawing	2
4	Practice, Making plan of Projection, Creation Multi-view Orthographic, projection	2
5	Projection, Method of Projection, Projection Techniques. CADD	2
6	Drafting views in First angle & third angle Projection, Creating Auxiliary views& Sections	2
7	Freehand Sketching, Representing Standard base 2D drafting	2
8	Introduction of CADD (Computer Aided Drafting & Designing), Function keys, Shortcut keys	2
9	Different sizes of paper. Application of CADD, Automatic Drafting	2
10	Geometric Modelling, Wire frame Modelling	2
11	Surface Modelling, and Solid Modelling, Drawing Elementary CADD command	2
12	Line, Polyline, Polygon, Circle, Polyline, arc, ellipse, Text Single Text, Multi-text, D-text.	2
13	Modifying Elementary Commands – Erase, Move, Copy, Mirror, Offset, Scale, Stretch, Chamfer, fillet & explode, Making layers, line type & Line weight	2
14	CADD Application & its feature, Introduction to Standard based 2D drafting (Based on International standard for representation & conformation)	2
15	Different menus of Auto-Cad, Function keys, Shortcut keys, Paper size. Making Title Block,	2

16	Writing it & inserting it in any drawing file with scale, angle & explode options, Creating a new template file (. Dwt file) & applying it to every drawing file.	2
17	Drafting of building plan, Elevation, Section Views, Applying dimensions to various views by using dimension style.	2
18	Creating Revolved, Ruled, and Tabulated & Edge surfaces.	2
19	Creating Isometric drawing with the Iso-plane (Left, Top & Right Plane	2
20	Shaded it from visual style. Making Solid Model, Box, Polysolid, M Cylinder, Cone, Pyramid, Wedge	2
	Reference Books	
1	AUTOCAD 2018 Instructor by Shawna D. lockhart	
2	Autodesk AutoCAD Certified User Study Guide, By Daniel John Stine AIA, IES, CSI, CDT, Well AP, William G. Wyatt Ed.D., CET	
3	Introduction to AutoCAD for Civil Engineering Applications By Nighat Yasmin	


Principal
 Einstein Academy of Technology & Management
 Bhubaneswar, Khurda


Course Coordinator



Einstein Academy of Technology and Management
Baniatangi, Bajapur, Khurda-752060
Department of Computer Science & Engineering

Syllabus			
Name of the Course:	Software Testing	Course Code	UG02A407
Branch:	Computer Science & Engineering	Duration	30 Hours
Semester: 7th			
COURSE OUTCOMES:			
CO1	Understand functional (black box) software testing		
CO2	Identify a number of test styles and technique		
CO3	Understand the basic principle of testing		
CO4	Understand Functional and Non-functional testing		
CO5	Understand Automation Testing tool: Selenium		
CO6	Learn uses of Web Driver and Test NG in Selenium		
Sl. No.	Topic(s) covered	No. of hours	
1	Learn Tableau Basic Reports: Creating a First Report, Data Labels, Learn Tableau Charts: Area Chart, Bar Chart, Pareto Chart; Tableau Calculations & Filters:	2	
2	Calculated Fields, Basic Approach to Calculate Rank, Advanced Approach to Calculate Ra, Calculating Running Total;	2	
3	Learn Tableau Dashboards: Create a Dashboard, Format Dashboard Layout	2	
4	Power BI: Power BI: Overview: Power BI concepts, Overview: Power BI data sources,	2	
5	Connect to a SaaS solution, Upload a local CSV file, Connect to Excel data that can be refreshed	2	
6	Create a Report with Visualizations, Reports and Dashboards, Modify and Print a Report	2	
7	Create a Report with Visualizations, Reports and Dashboards, Modify and Print a Report	2	
8	Python Basics: The print statement, Comments, Python Data Structures & Data Types	2	
9	String Operations in Python, Simple Input & Output, Simple Output Formatting	2	
10	Deep copy, Shallow copy, Operators in python	2	
11	Learn Tableau Basic Reports: Creating a First Report, Data Labels, Learn Tableau Charts: Area Chart, Bar Chart, Pareto Chart; Tableau Calculations & Filters:	2	
12	Calculated Fields, Basic Approach to Calculate Rank, Advanced Approach to Calculate Ra, Calculating Running Total;	2	
13	Selenium Web Driver, Installing Selenium IDE, Set up Test NG, Maven and Selenium (2.53.1 & 3.0 +) for eclipse,	2	
14	Web DriverBasics,	2	
15	Test NG: Various Annotations in Test NG,	2	



Einstein Academy of Technology and Management Khordha, Bhubaneswar

SUMMARY REPORT

NAME OF THE COURSE: Fundamental of Xilinx Vivado

BRANCH: ECE

SEMESTER: 8th

DURATION: 40hrs

NAME OF THE TRAINER: Prof. Manish Tripathy

COURSE OUTCOMES:

CO-1: Understand Basics of Vivado design suite

CO-2: Apply working knowledge of FPGA design or designing for performance

CO-3: To study about Vivado IDE Project Management and IP Library

CO-4: Break a complex task up into smaller, simpler tasks

CO-5: Solve, Design and Analyse various Analog and Digital Electronics circuits and Tabulate results and Analyse

CO-6: Understand the main features and Simulation of the FPGA Design and development mathematical programming environment.

Sl. No.	Topic covered	No. of Hours
1	Introduction, Navigating Content by Design Process	2
2	Getting Started, Debug Terminology	2
3	Vivado Lab Edition, Installation, Using the Vivado Lab Edition	2
4	Vivado Lab Edition Project , Programming Features ,Debug Features	2
5	Generating the Bitstream or Device Image, Changing the Bitstream File Format Settings	2
6	Changing the Device Image (.pdi) File Format Settings, Changing Device Configuration Bitstream Settings	2
7	Programming the Device, Opening the Hardware Manager, Opening Hardware Target Connections, Connecting to a Hardware Target Using hwserver,	2
8	Opening a New Hardware Target, Troubleshooting a Hardware Target, Associating a Programming File with the Hardware Device	2
9	Programming the Hardware Device, Closing the Hardware Target, Closing a Connection to the Hardware Server	2
10	Reconnecting to a Target Device with a Lower JTAG Clock Frequency , Connecting to a Server with More Than 32 Devices in a JTAG Chain, Changing the Default SmartLynq Ports	2
11	Using Vivado Hardware Server to Debug Over Ethernet, Xilinx Virtual Cable (XVC), Programming Configuration Memory Devices	2
12	Changing Device Image Properties, Creating a Configuration Memory File (for FPGA Devices), Creating a Configuration Memory File for SPI Dual Quad (x8) Devices (for FPGA Devices)	2
13	Creating an Initialization PDI (for Versal Devices), Connect to the Hardware Target in Vivado, Adding a Configuration Memory Device	2
14	Programming a Configuration Memory Device, Programming a Configuration Memory Device (Versal Devices), Booting the FPGA Device	2
15	Configuration Failures in Master Mode, Advanced Programming Features, Readback and Verify	2

16	Generating Encrypted and Authenticated Files for 7 Series Devices, Generating Encrypted and Authenticated Files for UltraScale and UltraScale, Programming the AES Key for 7 Series Devices,	2
17	Programming the AES Key for UltraScale and UltraScale+ Devices, eFUSE Register Access and Programming, Cable Support for eFUSE Programming, eFUSE Register Access and Programming for 7 Series Devices,	2
18	eFUSE Register Access and Programming for UltraScale and UltraScale+ Devices, eFUSE NKZ File, System Monitor	2
19	Serial Vector Format (SVF) File Programming, Creating an SVF Target, Adding Devices to an SVF Target, Adding Configuration Memory Parts to Xilinx Devices	2
20	Operations on the SVF Chain, Writing SVF Files, Executing SVF Files, Debugging the Design, RTL-Level Design Simulation	2

Smt Kr. Chandhary
Course Coordinator



S. S. Saha
Principal
Einstein Academy of Technology & Management
Bhubaneswar, Khurda



Einstein Academy of Technology and Management Khordha, Bhubaneswar

SUMMARY REPORT

NAME OF THE COURSE: Embedded System and Programming

BRANCH: ECE

SEMESTER: 5th

DURATION: 40hrs

NAME OF THE TRAINER: Mr. Rakesh Kumar Sahoo

COURSE OUTCOMES:

CO-1: Understand Basics of Embedded system and Introduction to Embedded C

CO-2: Apply working knowledge of Microprocessor and Microcontroller classification

CO-3: To study about Registers & Memory Of AT89C51

CO-4: Break a complex task up into smaller, simpler tasks

CO-5: Solve, Design and Analyse of Kiel Compiler and Proteus and Sensor Interfacing

CO-6: Understand the main features and Simulation of the Embedded system Design and development mathematical programming environment.

Sl. No.	Topic covered	No. of Hours
1	Introduction to embedded system, History & Need Of Embedded System, Basic Components Of Embedded System, Programming Language Classification Of Embedded System , Advantage & Disadvantage	2
2	Microprocessor & Microcontroller Classification: Difference between Microprocessor & Microcontroller, Classification based on architecture, Memory Classification	2
3	Registers & Memory Of AT89C51: Description of RAM , Description of CPU Registers , Functions of SFR	2
4	Introduction Of Embedded C : Introduction to Embedded C , Difference between C & Embedded C , Programming style , Basic structure of C program	2
5	Constants, Variables & Data Types : Keywords & Identifiers , Data type & its memory representation , Arrays and strings	2
6	Operators , Types of Operators , Bitwise Operators explained	2
7	Control Structures & Loops: Decision making with if statement , If...else statement , Switch statement, and GOTO statement , The While and Do – While statements , For statement	2
8	Functions, Why Functions, Types of Functions, A Multifunctional program ,Return values & their types	2
9	Introduction To Softwares : Kiel Compiler , Proteus	2
10	Interfacing Of Led : Introduction of LED's ,Interfacing Circuit Description of LED's ,Programming of LED's Interfacing	2
11	Interfacing Of Seven Segment Display, Introduction to 7 Segment Display , Types of 7 Segment Display ,Interfacing Circuit Description of 7 Segment Display ,Programming of 7 Segment Display Interfacing	2
12	Interfacing Of LCD : Introduction to 16 x 2 LCD ,Commands of 16 x 2 LCD , Interfacing Circuit Description of 16 x 2 LCD , Programming of 16 x 2 LCD	2
13	Interfacing Of Switches & Keyboard Matrix : Introduction to Switches & Keyboard Matrix , Interfacing Circuit of Switches & Keyboard Matrix ,	2

	Programming of Keyboard Matrix & Switches, Controlling of LED's by using Switches ,Key board Matrix & LCD Interfacing Program	
14	Interfacing Of Motors: Introduction to Motors, Types of Motors used in Embedded System , Programming & Controlling of motors in Embedded System	2
15	Timers & Counters Programming :Introduction to Timers & Counters , Difference between Timer and Counter , Description of SFR associated with Timers & Counters , Programming of Timers & Counters	2
16	Serial Communication Programming: Introduction to Serial Communication, Types of Serial Communication, Description of SFR associated with Serial Communication , Programming of UART	2
17	Interfacing Of ADC : Introduction to ADC , Programming of ADC	2
18	Sensor Interfacing : Introduction to sensing devices ,Interfacing of IR Sensors , Interfacing of Temperature Sensor	2
19	Embedded Networking: I2C Bus Standard, Bluetooth, Zigbee ,USB ,UART	2
20	Linux Fundamentals & Device Driver Programming: Linux Fundamentals ,Linux Commands , VI Editors ,Introduction to Device Driver ,The Role of Device Driver ,Kernel Module Vs Application ,Types of Device Driver ,Character Driver , Block Driver & Network Driver	2


Course Coordinator




Principal
Einstein Academy of Technology & Management
Bhubaneswar, Khurda



Einstein Academy of Technology and Management Khordha, Bhubaneswar

SUMMARY REPORT

NAME OF THE COURSE: Fundamentals of MATLAB

BRANCH: ECE

SEMESTER: 4th

DURATION: 40hrs

NAME OF THE TRAINER: Mr. Jayawardhan Pandit

COURSE OUTCOMES:

CO-1: Understand Basics of MATLAB coding

CO-2: Apply working knowledge of MATLAB package to simulate and solve Electrical, Electronic circuits and Applications.

CO-3: Simulate various electric circuits in MATLAB simulation tool

CO-4: Break a complex task up into smaller, simpler tasks.

CO-5: Solve, Simulate and Analyse various Analog and Digital Electronics circuits and Tabulate results and Analyse

CO-6: Understand the main features and importance of the MATLAB mathematical programming environment.

Sl. No.	Topic covered	No. of Hours
1	Introduction to MATLAB and advantages	2
2	The MATLAB Desktop and Command window, Command history	2
3	Start button, Debug window, Figure window, MATLAB Workspace	2
4	MATLAB Basics: Variables and Arrays, Initializing Variables in MATLAB, Multidimensional Array	2
5	Branching statements and program design: Logical data types: Operators, Branches	2
6	Loops, Logical arrays and vaporizations	2
7	The MATLAB Profiler	2
8	User define functions, Variable Passing in MATLAB: The Pass-by-Value Scheme	2
9	Optional Arguments: Sharing Data Using Global Memory ,Preserving Data Between Calls to a Function, Function Functions	2
10	Sub functions, Private Functions, and Nested Functions , Sub functions Private Functions , Nested Functions , Order of Function Evaluation	2
11	Complex Data, Complex Variables, Using Complex Numbers with Relational Operators , Complex Functions , Plotting Complex Data Trimming Whitespace from Strings ,Numeric-to-String Conversions ,String-to-Numeric Conversions	2
12	String Conversion Functions ,Creating Two-Dimensional Character Arrays ,Concatenating Strings , Comparing Strings	2
13	String Functions , Searching/Replacing Characters within a String ,Uppercase and Lowercase Conversion ,	2
14	Advanced features: Sparse Arrays, The sparse Attribute,Cell Arrays ,Creating Cell Arrays ,Using Braces {} as Cell Constructors Viewing Using Data in Structure Arrays The get field and set field Functions Dynamic Field Names Using the size Function with Structure Arrays Nesting Structure Arrays	2
15	The Contents of Cell Arrays ,Extending Cell Arrays ,Deleting Cells in Arrays ,Using Data in Cell Arrays, Removing Fields from Structures	2
16	Input/ Output Function: The textread Function More about the load and save	2

	Commands, An Introduction to MATLAB File Processing ,File Opening and Closing ,The fopen Function ,The fclose Function ,Binary I/O Functions	
17	The fwrite Function ,The fread Function ,Formatted I/O Functions ,The sprintf Function ,Understanding Format Conversion Specifiers ,How Format Strings Are Used ,	2
18	The sprintf Function ,The fscanf Function ,The fgetl Function ,The fgets Function ,Comparing Formatted and Binary I/O Functions ,File Positioning and Status Functions	2
19	Graphical User Interfaces: How a Graphical User Interface Works ,Creating and Displaying a Graphical User Interface ,A Look Under the Hood ,The Structure of a Call back Sub function ,Adding Application Data to a Figure, A Few Useful Checkboxes and Radio Buttons , Popup Menus ,List Boxes ,Sliders	2
20	The MATLAB Compiler: Setting Up the MATLAB Compiler, Setting Up Computers that Run Compiled Applications, Using the MATLAB Compiler, The Deployment Tool	2



Course Coordinator




Principal
Einstein Academy of Technology & Management
Bhubaneswar, Khurda



Einstein Academy of Technology and Management
Khordha, Bhubaneswar
Department of Electronics and Communication Engineering

SUMMARY REPORT

NAME OF THE COURSE: FPGA Development in VHDL

BRANCH: ECE

SEMESTER: 8th(4th Year)

DURATION: 40hrs

NAME OF THE TRAINER: Mr. Gajendra Singh

COURSE OUTCOMES:

CO-1:	Understand Basics of Vivado design suite
CO-2:	Apply working knowledge of FPGA design or designing for performance
CO-3:	To study about Vivado IDE Project Management and IP Library
CO-4:	Break a complex task up into smaller, simpler tasks
CO-5:	Solve, Design and Analyse various Analog and Digital Electronics circuits and Tabulate results and Analyse
CO-6:	Understand the main features and Simulation of the FPGA Design and development mathematical programming environment.

Sl. No.	Topic covered	No. of Hours
1	Vivado System-Level Design Flows, Navigating Content by Design Process	2
2	Industry Standards-Based Design, Design Flows, RTL-to-Bitstream Design Flow	2
3	Alternate RTL-to-Bitstream Design Flows	2
4	Understanding Use Models, Vivado Design Suite Use Models, Working with the Vivado Integrated Design Environment (IDE), Working with Tcl	2
5	Understanding Project Mode and Non-Project Mode, Using Third-Party Design Software Tools	2
6	Interfacing with PCB Designers, Using Project Mode , Project Mode Advantages, Creating Projects	2
7	Understanding the Flow Navigator, Performing System-Level Design Entry, Working with IP	2
8	Creating IP Subsystems with IP Integrator, Logic Simulation, Running Logic Synthesis and Implementation	2
9	Viewing Log Files, Messages, Reports, and Properties, Opening Designs to Perform Design Analysis and Constraints Definition, Device Programming	2
10	Hardware Verification, and Debugging, Using Project Mode Tcl Commands, Using Non-Project Mode, Non-Project Mode Advantages	2
11	Reading Design Sources, Design Flows Overview ,Working with IP and IP Subsystems,	2
12	Running Logic Simulation, Running Logic Synthesis and Implementation, Generating Reports, Using Design Checkpoints	2
13	Performing Design Analysis Using the Vivado IDE, Using Non-Project Mode Tcl Commands, Source Management and Revision Control	2
14	Recommendations, Interfacing with Revision Control Systems	2
15	Using the HDL Instantiation Method to Debug a Design, Creating a Project with	2

	the Vivado New Project Wizard	
16	Synthesize Implement and Generate Bitstream, Using a VIO Core to Debug a Design in Vivado Design Suite	2
17	Creating a Project with the Vivado New Project Wizard, Synthesize, Implement, and Generate the Bitstream, Using the Synplify Pro Synthesis Tool and Vivado Design Suite to Debug a Design	2
18	Create a Synplify Pro Project, Synthesize the Synplify Project, Create DCPs for the Black Box Created in Synplify Pro, Create a Post Synthesis Project in Vivado IDE	2
19	Add More Debug Nets to the Project, Implementing the Design and Generating the Bitstream, Using the Vivado Logic Analyzer to Debug Hardware	2
20	Verifying Operation of the Sine Wave Generator, Debugging the Sine Wave Sequencer State Machine	2


Course Coordinator




Principal
Einstein Academy of Technology & Management
Bhubaneswar, Khurda



Einstein Academy of Technology and Management
Khordha, Bhubaneswar
Department of Electronics and Communication Engineering

SUMMARY REPORT

NAME OF THE COURSE: Embedded System and Programming

BRANCH: ECE

SEMESTER: 5th(3rd Year)

DURATION: 40hrs

NAME OF THE TRAINER: Mr. Rakesh Kumar Sahoo

COURSE OUTCOMES:

CO-1:	Understand Basics of Embedded system and Introduction to Embedded C
CO-2:	Apply working knowledge of Microprocessor and Microcontroller classification
CO-3:	To study about Registers & Memory of AT89C51
CO-4:	Break a complex task up into smaller, simpler tasks
CO-5:	Solve, Design and Analyse of Kiel Compiler and Proteus and Sensor Interfacing
CO-6:	Understand the main features and Simulation of the Embedded system Design and development mathematical programming environment.

Sl. No.	Topic covered	No. of Hours
1	Introduction to embedded system, History & Need of Embedded System, Basic Components Of Embedded System, Programming Language Classification of Embedded System , Advantage & Disadvantage	2
2	Microprocessor & Microcontroller Classification: Difference between Microprocessor & Microcontroller, Classification based on architecture , Memory Classification	2
3	Registers & Memory Of AT89C51: Description of RAM , Description of CPU Registers , Functions of SFR	2
4	Introduction Of Embedded C : Introduction to Embedded C , Difference between C & Embedded C , Programming style , Basic structure of C program	2
5	Constants, Variables & Data Types : Keywords & Identifiers , Data type & its memory representation , Arrays and strings	2
6	Operators , Types of Operators , Bitwise Operators explained	2
7	Control Structures & Loops: Decision making with if statement , If....else statement , Switch statement, and GOTO statement , The While and Do – While statements , For statement	2
8	Functions, Why Functions ,Types of Functions , A Multi functional program ,Return values & their types	2
9	Interoduction To Softwares : Kiel Compiler , Proteus	2
10	Interfacing Of Led : Introduction of LED's ,Interfacing Circuit Description of LED's ,Programming of LED's Interfacing	2
11	Interfacing Of Seven Segment Display, Introduction to 7 Segment Display , Types of 7 Segment Display ,Interfacing Circuit Description of 7 Segment Display ,Programming of 7 Segment Display Interfacing	2
12	Interfacing Of LCD : Introduction to 16 x 2 LCD ,Commands of 16 x 2 LCD , Interfacing Circuit Description of 16 x 2 LCD , Programming of 16 x 2 LCD	2

13	Interfacing Of Switches & Keyboard Matrix : Introduction to Switches & Keyboard Matrix , Interfacing Circuit of Switches & Keyboard Matrix , Programming of Keyboard Matrix & Switches , Controlling of LED's by using Switches ,Key board Matrix & LCD Interfacing Program	2
14	Interfacing Of Motors: Introduction to Motors , Types of Motors used in Embedded System , Programming & Controlling of motors in Embedded System	2
15	Timers & Counters Programming :Introduction to Timers & Counters , Difference between Timer and Counter , Description of SFR associated with Timers & Counters , Programming of Timers & Counters	2
16	Serial Communication Programming: Introduction to Serial Communication, Types of Serial Communication, Description of SFR associated with Serial Communication , Programming of UART	2
17	Interfacing Of ADC : Introduction to ADC , Programming of ADC	2
18	Sensor Interfacing : Introduction to sensing devices ,Interfacing of IR Sensors , Interfacing of Temperature Sensor	2
19	Embedded Networking: I2C Bus Standard, Bluetooth, Zigbee ,USB ,UART	2
20	Linux Fundamentals & Device Driver Programming: Linux Fundamentals ,Linux Commands , VI Editors ,Introduction to Device Driver ,The Role of Device Driver ,Kernel Module Vs Application ,Types of Device Driver ,Character Driver , Block Driver & Network Driver	2

Course Coordinator

Principal
Einstein Academy of Technology & Management
Bhubaneswar, Khurda



Einstein Academy of Technology and Management
Khordha, Bhubaneswar
Department of Electronics and Communication Engineering

SUMMARY REPORT

NAME OF THE COURSE: MATLAB & SIMULINK

BRANCH: ECE

SEMESTER: 4th

DURATION: 40hrs

NAME OF THE TRAINER: Mr. Sujit Patel

COURSE OUTCOMES:

CO-1: Understand Basics of MATLAB coding.

CO-2: Apply working knowledge of MATLAB package to simulate and solve Electrical, Electronic circuits and Applications.

CO-3: Simulate various electric circuits in MATLAB simulation tool

CO-4: Break a complex task up into smaller, simpler tasks

CO-5: Solve, Simulate and Analyse various Analog and Digital Electronics circuits and Tabulate results and Analyse

CO-6: Understand the main features and importance of the MATLAB mathematical programming environment.

Sl. No.	Topic covered	No. of Hours
1	Introduction to MATLAB and advantages	2
2	The MATLAB Desktop and Command window, Command history	2
3	Start button, Debug window, Figure window, MATLAB Workspace	2
4	Working with Complex Numbers, Polynomial Algebra ,Working with Continuous-time Systems	2
5	Working with Discrete-time Systems , Working with Discrete-time Systems , Working with Symbolic Calculations	2
6	The Control Commands	2
7	SIMULINK Overview for Beginners, What is SIMULINK , Creating a SIMULINK Model	2
8	Basic Elements for Constructing the Model, Getting Started with SIMULINK ,How to build a SIMULINK Model	2
9	Simple Examples to Commence , Basic SIMULINK Example , Integration of a Sine, Basic Example	2
10	Example 3 (Familiarity with the Fcn Block) ,Example 4: Familiarity with the MATLAB Function (fcn) Block ,Exploiting the Plotting Features of MATLAB	2
11	Simulation of Electrical , Build the SIMULINK Model	2
12	Simulation of a Step Response of Series RLC Circuits Represented by Second-order Differential Equations	2
13	The SIMULINK Model for a RL Series Circuit, The SIMULINK Model for a LC Series Circuit	2
14	Simulation of Digital Circuits, To realize Logic Gates using SIMULINK,	2
15	To Realize a Truth Table of an OR Gate using the Signal Generator	2

16	The SIMULINK Model for an AND Gate using the Signal Builder	2
17	To Study an Ex-OR Gate Operation using the Signal Builder	2
18	To Study A 4-bit serial adder logic circuit using AND, OR, and NOT gates.	2
19	The SIMULINK Model Of applying MATLAB to AC circuit analysis is similar to applying MATLAB to resistive circuit analysis	2
20	The SIMULINK Model of Operational amplifier circuit and simplified version	2


Course Coordinator




Principal
Einstein Academy of Technology & Management
Bhubaneswar, Khurda



Einstein Academy of Technology and Management Khordha, Bhubaneswar

SUMMARY REPORT

NAME OF THE COURSE: MACHINE LEARNING FOR AUTONOMOUS VEHICLES

BRANCH: EE& EEE

SEMESTER: 8th

DURATION: 40hrs

NAME OF THE TRAINER: Mr. Bijay Kumar Mohapatra

COURSE OUTCOMES:

CO-1:	Familiarize and work with advanced simulation software and hardware technologies
CO-2:	Study the fundamentals of various vehicular communication technologies.
CO-3:	Identify various communication protocols and technologies used in vehicle networks
CO-4:	It will develop critical Machine Learning skills that are commonly leveraged in autonomous vehicle engineering.
CO-5:	Choose a suitable drive scheme for electric and hybrid vehicle depending on resources.
CO-6:	Select proper energy storage and associated power electronic systems for electric vehicle applications.

Sl. No.	Topic covered	No. of Hours
1	Levels of autonomy in automobiles - Levels 0 through 5.	2
2	Subsystems required for embedding intelligence into automobiles such as sensors	2
3	Subsystems required for embedding intelligence into automobiles such as feedback control, software and hardware architecture etc.	2
4	Sensors, perception and visualization for decision making	2
5	Sensors, perception and visualization for decision making	2
6	Introduction – Types of Learning Paradigms	2
7	Introduction to Supervised,	2
8	Unsupervised Learning	2
9	object detection, object recognition	2
10	object classification, and object localization	2
11	Classification (Detection and Classification of Objects, K-Nearest-Neighbour, Bayesian Classification:	2
12	Naive Bayes, Decision Trees, Over fitting, Random Forests, SVM, Multiclass & Ordinal Classification	2
13	Kernels. Dimensionality Reduction: Feature Extraction & Selection	2
14	Regression: Instance based learning:, Linear Regression, Sensitivity Analysis	2
15	Multivariate Regression.: Linear Classification, Logistic Regression	2
16	Perception: Camera, LiDAR, RADAR, Sensor Fusion.	2
17	Lane Line Detection	2
18	Road Segmentation Obstacle Detection, Traffic-Signs/Light	2
19	Detection, Road Marking, Distance Estimation	2
20	Driver Monitoring, Multi-Object Tracking.	2

Principal
Einstein Academy of Technology & Management
Bhubaneswar, Khurda

Course Coordinator



Einstein Academy of Technology and Management

Khordha, Bhubaneswar

SUMMARY REPORT

NAME OF THE COURSE: ELECTRIC VEHICLE TECHNOLOGY

BRANCH: EE& EEE

SEMESTER: 5th

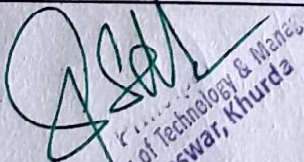
DURATION: 40hrs

NAME OF THE TRAINER: Mr. Arobinda Dash

COURSE OUTCOMES:

- CO-1: Familiarize and work with advanced simulation software and hardware technologies of electrical vehicles.
- CO-2: Study the fundamentals of various charging technologies of electric vehicle.
- CO-3: Study various protocols and technologies for exchange of power in between grid and vehicle networks.
- CO-4: Develop ideas on basic schemes of electric vehicles and hybrid electric vehicles.
- CO-5: Choose a suitable drive scheme for electric and hybrid vehicle depending on resources.
- CO-6: Select proper energy storage and associated power electronic systems for electric vehicle applications

Sl. No.	Topic covered	No. of Hours
1	Introduction to MATLAB	2
2	Matrices in MATLAB, Arithmetic Operations	2
3	The Smart Grid and Microgrid,	2
4	Impact of EVs on Distributed Energy	2
5	Resources in the Smart Grid, V2G Technology and PEVs Charging Infrastructures	2
6	Impact of EV and V2G	2
7	Impact of EV and V2G on the Smart Grid and Renewable Energy Systems	2
8	Types of Electric Vehicles,	2
9	Motor Vehicle Ownership and EV Migration	2
10	Impact of Estimated EVs on Electrical Network,	2
11	Impact on Drivers and the Smart Grid	2
12	Power Conversion Technology in the Smart Grid and EV	2
13	Dynamical Modelling of EV Connected to Single-Phase Smart Grid	2
14	Dynamical Modelling of EV Connected to Three-Phase Smart Grid	2
15	Power Conversion Problem Formulation in Smart Grids with Evs	2
16	Power Control and Monitoring of the Smart Grid with Evs	2
17	Impacts of EV Penetration on Grid Power Profile and Requirements of Its Control and Monitoring	2
18	Vehicle-to-Grid: Linking Electric Vehicles to the Smart Grid Voltage and	2
19	Frequency Regulation,	2
20	Supporting and Balancing of Intermittent RES.	2


Einstein Academy of Technology & Management
Bhubaneswar, Khurda


Course Coordinator



Einstein Academy of Technology and Management Khordha, Bhubaneswar

SUMMARY REPORT

NAME OF THE COURSE: MATLAB PROGRAMMING

BRANCH: EE& EEE

SEMESTER: 4th

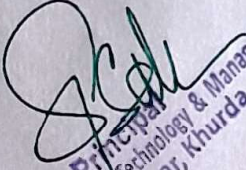
DURATION: 40hrs

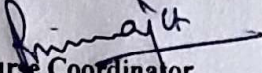
NAME OF THE TRAINER: Mr. Binaya Kumar Malika

COURSE OUTCOMES:

- CO-1: Understand Basics of MATLAB coding
- CO-2: Write the program for a given problem in MATLAB coding
- CO-3: Simulate various electric circuits in MATLAB simulation tool
- CO-4: Break a complex task up into smaller, simpler tasks.
- CO-5: Solve, Simulate and Analyse various Analog and Digital Electronics circuits and Tabulate results and Analyse
- CO-6: Understand the main features and importance of the MATLAB mathematical programming environment.

Sl. No.	Topic covered	No. of Hours
1	Introduction to MATLAB and advantages	2
2	Arithmetic Operations In MATLAB, Trigonometry (Engine Piston Example	2
3	2D Bar Graphs, Pie Charts, & Filled Areas In MATLAB, Introduction to Programming With MATLAB, M-Files In MATLAB, Inputs & Outputs Commands In MATLAB	2
4	Plotting 2D Graphs In MATLAB, Editing your Plots from the plot window In MATLAB, fprintf Function In MATLAB,	2
5	Getting Started with Symbolic Math Toolbox In MATLAB, Differentiation In MATLAB, Limits In MATLAB, integration In MATLAB, solving Algebraic Equations In MATLAB.	2
6	Solving One Non Linear Equation In MATLAB Using Fzero Function	2
7	Simulation of a Simple Electric Circuit	2
8	Construction of Inverting Operational Amplifiers, imulation of an Inverting Amplifier, Construction of non Inverting Operational Amplifiers	2
9	Construction of non Inverting Operational Amplifiers	2
10	Introduction to First Order Circuits, Source-Free RC Circuit, Source-Free RL Circuit	2
11	Step response simulations, Step Response of an RL Circuit	2
12	Simulation of Step Response of an RL Circuit, Half Wave Controlled Rectifier Principle of Operation, Bridge Controlled Rectifier	2
13	Principle of Operation, Simulation of Bridge Controlled Rectifier in MATLAB,	2
14	Simulation of PV Cell in MATLAB and Obtaining V-I Characteristics,	2
15	Separately Excited DC Motor Principle of Operation, Construction and Theory of Operation of Induction Machines	2
16	Tuning a PID Controller in MATLAB Simulink	2
17	Importing Data from PSCAD Program for Fault Location Detection to MATLAB Program	2
18	Importing Data from PSCAD Program for Fault Location Detection to MATLAB Program	2
19	MPPT Simulation	2


Principal
Einstein Academy of Technology & Management
Bhubaneswar, Khurda


Course Coordinator



Einstein Academy of Technology and Management

Khordha, Bhubaneswar

SUMMARY REPORT

NAME OF THE COURSE: Multilevel Inverters

BRANCH: EE& EEE

SEMESTER: 8th

DURATION: 40hrs

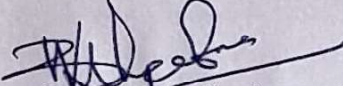
NAME OF THE TRAINER: Mr. Arobinda Dash

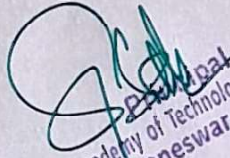
COURSE OUTCOMES:

CO-1:	Understand different structures and control strategies of conventional multilevel inverters (MLI).
CO-2:	Understand various emerging topologies and control strategies of MLI.
CO-3:	Learn different industrial applications of MLI.
CO-4:	Understanding, design and analysis of various conventional and emerging topologies, control techniques and applications of multilevel inverters.
CO-5:	Study of practical operational issues and their solution in multilevel inverter fed industrial applications.
CO-6:	Knowledge of different problem solving technique

Sl. No.	Topic covered	No. of Hours
1	Multilevel Converter Structure and Control: Operation as converter and inverter;	2
2	bidirectional power flow capability in multilevel converter (MLI); control strategies, modelling, design and performance analysis; closed loop control of MLI	2
3	selection of appropriate control technique for a particular topology and application	2
4	universal control scheme with voltage-level based methods. Modular Multilevel Converter (MMC):	2
5	various topology, cell design, modulation techniques, capacitor voltage balancing, fault tolerant capability; design and performance analysis.	2
6	Emerging MLI Topologies: Emergence of new topologies	2
7	Emergence of new control techniques; structure and working principle of new topologies such as T-type inverter,	2
8	reduced device count topologies, Resonant MLI; asymmetrical and hybrid topologies	2
9	universal control scheme	2
10	cross-connected sources based multilevel inverter	2
11	Some Practical Issues in MLI:	2
12	Issues on Capacitor voltage unbalancing, charge balance control, common mode voltage control	2
13	Electromagnetic Interference, Electromagnetic Compatibility	2
14	fault-tolerant capability; fault detection techniques; thermal management, inverter losses, efficiency	2
15	power density, reliability issues, Techniques to mitigate above practical issues	2
16	Applications of MLI: High Power Motor Drives	2

17	Ship Propulsion, Traction Drives, Switch Mode Power Supply	2
18	Renewable Energy Applications,	2
19	Grid connected and standalone PV/Wind power generation system with MLI	2
20	Power Quality Improvement with MLI i.e. active power filter, STATCOM, UPQC; HVDC Transmission.	2


Course Coordinator


Principal
Einstein Academy of Technology & Management
Bhubaneswar, Khurda



Einstein Academy of Technology and Management

Khordha, Bhubaneswar

SUMMARY REPORT

NAME OF THE COURSE: Pulse Width Modulation Techniques for Power Converters

BRANCH: EE& EEE

SEMESTER: 5th

DURATION: 40hrs

NAME OF THE TRAINER: Mr. Bijay Kumar Mohaptra

COURSE OUTCOMES:

CO-1: Appreciate importance of PWM techniques.

CO-2: Implement PWM using different strategies.

CO-3: Understand different strategies of PWM for losses and THD in the converter.

CO-4: Necessity and importance of PWM techniques

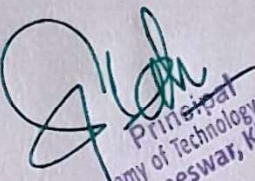
CO-5: To learn different PWM technique to reduce losses and torque ripple.

CO-6: Understand the main features and Simulation of the PWM and development in mathematical programming environment.

SL No.	Topic covered	No. of Hours
1	Power electronic converters for dc-ac and ac-dc power conversion:	2
2	Electronic switches, dc-dc buck and boost converters	2
3	H-bridge, multilevel converters – diode clamp, flying capacitor and cascaded-cell converters	2
4	voltage source and current source converters	2
5	evolution of topologies for dc-ac power conversion from dc-dc converters.	2
6	Review of Fourier series, fundamental and harmonic voltages; machine model for harmonic voltages	2
7	undesirable effects of harmonic voltages – line current distortion, increased losses, pulsating torque in motor drives; control of fundamental voltage	2
8	mitigation of harmonics and their adverse effects Pulse width modulation (PWM) at low switching frequency	2
9	Square wave operation of voltage source inverter, PWM with a few switching angles per quarter cycle, equal voltage contours	2
10	selective harmonic elimination, THD optimized PWM, off-line PWM.	2
11	Average pole voltages, sinusoidal modulation, third harmonic injection, continuous PWM	2
12	bus-clamping or discontinuous PWM 20 Space vector based PWM: Space vector concept and transformation, per-phase methods from a space vector perspective,	2
13	space vector based modulation, conventional space vector PWM	2
14	bus-clamping PWM, advanced PWM	2
15	triangle-comparison approach versus space vector approach to PWM	2
16	Analysis of line current ripple	2
17	Synchronously revolving reference frame; error between reference voltage and applied voltage	2
18	integral of voltage error; evaluation of line current ripple	2
19	hybrid PWM for reduced line current ripple	2

20	Problem solving technique	2
----	---------------------------	---


Course Coordinator


Principal
Einstein Academy of Technology & Management
Bhubaneswar, Khurda



Einstein Academy of Technology and Management

Khordha, Bhubaneswar

SUMMARY REPORT

NAME OF THE COURSE: PLC and SCADA

BRANCH: EE& EEE

SEMESTER: 4th

DURATION: 40 Hrs

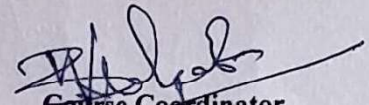
NAME OF THE TRAINER: Mr. Biswajit Mohaptra

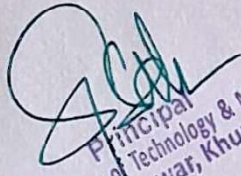
COURSE OUTCOMES:

CO-1:	Discuss history of PLC and describe the hardware components of PLC: I/O modules, CPU, memory devices, other support devices, operating modes and PLC programming.
CO-2:	Describe field devices Relays, Contactors, Motor Starters, Switches, Sensors, Output Control Devices, Seal-In Circuits, and Latching Relays commonly used with I/O module.
CO-3:	Analyze PLC timer and counter ladder logic programs and describe the operation of different program control instructions.
CO-4:	Discuss the execution of data transfer instructions, data compare instructions and the basic operation of PLC closed-loop control system.
CO-5:	Describe the operation of mechanical sequencers, bit and word shift registers, processes and structure of control systems and communication between the processes.
CO-6:	Understand the main features of word-level math instructions, File Arithmetic Operations in programming environment.

Sl. No.	Topic covered	No. of Hours
1	Introduction, Parts of a PLC, Principles of Operation, Modifying the Operation, PLCs versus Computers, PLC Size and Application	2
2	The I/O Section, Discrete I/O Modules, Analog I/O Modules, Special I/O Modules, I/O Specifications,	2
3	The Central Processing Unit (CPU), Memory Design, Memory Types	2
4	Programming Terminal Devices, Recording and Retrieving Data, Human Machine Interfaces	2
5	Processor Memory Organization, Program Scan, PLC Programming Languages	2
6	Relay-Type Instructions, Instruction Addressing, Branch Instructions, Internal Relay Instructions,	2
7	Electromagnetic Control Relays, Contactors, Motor Starters, Manually Operated Switches	2
8	Mechanically Operated Switches, Sensors, Output Control Devices, Seal-In Circuits, Latching Relays,	2
9	Converting Relay Schematics into PLC Ladder Programs	2
10	Writing a Ladder Logic Program Directly from a Narrative Description.	2
11	Counter Instructions, Up-Counter, Down-Counter, Cascading Counters	2
12	Incremental Encoder-Counter Applications, Combining Counter and Timer Functions.	2
13	Master Control Reset Instruction, Jump Instruction, Subroutine Functions	2
14	Immediate Input and Immediate Output Instructions, Forcing External I/O Addresses, Safety Circuitry	2
15	Selectable Timed Interrupt, Fault Routine, Temporary End Instruction, Suspend Instruction.	2

16	Data Manipulation, Data Transfer Operations	2
17	Data Compare Instructions, Data Manipulation Programs	2
18	Numerical Data I/O Interfaces, Closed-Loop Control	2
19	Math Instructions, Addition Instruction, Subtraction Instruction, Multiplication Instruction, Division Instruction	2
20	Other Word-Level Math Instructions, File Arithmetic Operations.	2


Course Coordinator


Principal
Einstein Academy of Technology & Management
Bhubaneswar, Khurda



Einstein Academy of Technology and Management
Baniatangi, Bajapur, Khurda-752060
Department of Mechanical Engineering

Syllabus

Name of the Course:	Robotics	Course Code	UG06A-402
Branch:	Mechanical Engineering	Duration	40 Hours

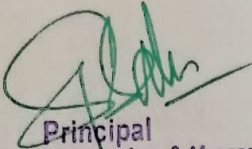
Semester: 7th

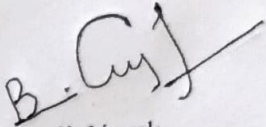
COURSE OUTCOMES:

CO1	Demonstrate knowledge of industrial robots, characteristics, end effectors and actuators
CO2	Apply spatial transformation to obtain forward and inverse kinematics
CO3	Understand the differential equation and their solutions
CO4	Solve robot dynamics problems, generate joint trajectory for path planning
CO5	Describe working principle of various sensors and program different operations
CO6	Appreciate applications of robots in industry.

Sl. No.	Topic(s) covered	No. of hours
1	Introduction to robotics: Automation and Robotics, major components of a robot, robotic like devices.	2
2	Classification by coordinate system and by control method, Specifications of robots, Architecture.	2
3	Number of degrees of freedom, economic analysis, and overview of robot present and future applications.	2
4	Robot end effectors: Introduction, end effectors, types of end effectors, grippers and tools.	2
5	Requirements and challenges of end effectors. Actuators: Pneumatic, Hydraulic actuators, electric & stepper motors	2
6	Transformations: Homogeneous coordinates transformations as applicable to translation, rotation, problems.	2
7	Kinematics: Introduction to Robot Kinematics-forward solution, Denavit-Hartenberg (D-H) Notation.	2
8	Forward kinematics, Simple problems involving planar manipulators, Simple inverse kinematic problems.	2
9	Differential transformations: Differential transformations of manipulators, Jacobians, problems.	2
10	Dynamics: Lagrange Euler and Newton Euler formulations.	2
11	Trajectory planning: Path planning, avoidance of obstacles, path planning algorithms.	2
12	Trajectory planning with cubic polynomial, blending, higher orders trajectories.	2
13	Robotic sensory devices: Introduction, Non-optical position sensors–potentiometers, synchros, optical.	2
14	Position sensors – optical interrupters, optical encoders (absolute	2

	&incremental).	
15	Proximity sensors: Contact type, noncontact type – reflected light scanning laser sensors.	2
16	Touch & slip sensors: Tactile sensors – proximity rod & photo detector sensors.	2
17	Slip sensors- Forced oscillation slip sensor, interrupted type slip sensors.	2
18	Robot programming: Robot programming, languages and software packages.	2
19	Material Transfer, Material handling, loading and unloading.	2
20	Processing, spot and continuous arc welding & spray-painting Assembly and Inspection.	2


Principal
 Einstein Academy of Technology & Management
 Bhubaneswar, Khurda


 Dr. Biswajit Nayak
Course Coordinator



Einstein Academy of Technology and Management
Baniatangi, Bajapur, Khurda-752060
Department of Mechanical Engineering

SYLLABUS

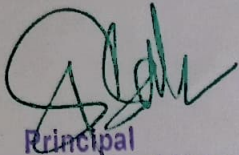
Name of the Course	PRO-ENGINEER	Course Code	UG06A-302
B.TECH.	Branch	Mechanical Engineering	
Semester	5 th	Duration	40 Hrs

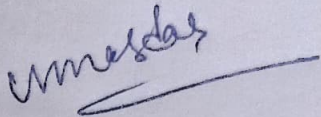
Course Outcomes: After successful completion of the course, the student will be able to

CO1	Understand the complete details of 2-D sketch modeling tools such as lines, circles, rectangle etc.
CO2	Learn how to create and design 3-D models and shapes using various commands like extrude, sweep, blend and many more
CO3	Learn to create complex shapes using surface modeling feature.
CO4	Create assembly, drawings and projections of parts and components.
CO5	Understand sheet metal modeling
CO6	Learn about parametric based approach to design your models.

Sl. No.	Topic(s) covered	No. of hours
01	Introduction to Pro Engineer, User Interface Overview, File operations, Sketch Mode	02
02	Drawing a Sketch, Dimensioning a Sketch, Working with Constraints	02
03	Modifying Dimensions, Deleting, Trimming	02
04	Mirroring, Palettes	02
05	Assignment practice	02
06	Sketch Operations of Fillets, Splines, Text in Sketches, Importing Sketches, Scaling and Rotating	02
07	Assignment practice	02
08	Solid Modeling of Extrude, Revolve, Default Datum Planes, Datum Planes and Axes, Datum Points, Creating Datum On-The-Fly	02
09	Assignment practice	02
10	Solid Modeling of Holes, Rounds, Chamfers, Ribs, Editing Features	02
11	Assignment practice	02
11	Object Replication of Patterns, Copying Features, Mirroring Geometry, Model Sections	02
12	Assignment practice	02
13	Solid Modeling of Sweep Features, Blend Features, Shell, Datum Curves, Draft Features	02
14	Assignment practice	02
15	Solid Modeling of Variable Section Sweep, Swept Blend, Helical Sweep	02
16	Blend Section to Surface, Blend Between Surfaces	02
17	Assignment practice	02
18	Deforming Solids of Toroidal Bend, Spinal Bend, Warp	02

19	Assignment practice	02
20	Overall practice section	02
Reference Books		
1.	Pro Engineer Wildfire 4 for Designers, by Sham Tickoo	
2.	Pro Engineer Wildfire 4 - Advance tutorial By Roger Toogood	
3.	Parametric Modeling with Pro/ENGINEER Wildfire 5.0 by Randy H. Shih	


Principal
 Einstein Academy of Technology & Management
 Bhubaneswar, Khurda


 Dr. Uma Sankar. Das
Course Coordinator



Einstein Academy of Technology and Management

Baniatangi, Bajapur, Khurda-752060

Department of Mechanical Engineering

SYLLABUS

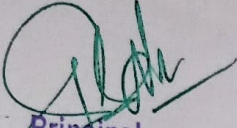
Name of the Course	CATIA v5	Course Code	UG06A-202
B.TECH.	Branch	Mechanical Engineering	
Semester	3rd	Duration	40 Hrs

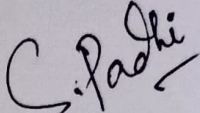
Course Outcomes: After successful completion of the course, the student will be able to

- | | |
|-----|---|
| CO1 | Recognize and navigate toolbars |
| CO2 | Access workbenches |
| CO3 | Efficiently create fully constrained sketches |
| CO4 | Create and modify solid parts |
| CO5 | Create basic surfaces |
| CO6 | Create assembly and drafting assembly |

Sl. No.	Topic(s) covered	No. of hours
01	Introduction: CATIA as a CAD Software: - Concept of Parametric Modeling, Feature Based Modeling, User Interface, Mouse operations, File types and Management, drawing profiles.	02
02	Sketcher: Profile toolbar, operation (corner, chamfer, delimitations, transformations, project 3D element), constraints, types of constraints	02
03	Sketch tools, tools (Sketch solving status, sketch analysis, output feature), visualization toolbar, and user selection filter.	02
04	Modeling of Machined component, Material Addition and Removal (Pad, Pocket, Shaft, Groove), Sketch and Positioned Sketch, Types of Fillets, Types of Chamfer, Types of Hole.	02
05	Pattern (Rectangular, Circular, User), Thread/Tap, Datum Features (Plane, Axes, Points), Simple Draft, Frequently used commands for Machined components in Catia / Creo	02
06	Advance Design features :- Axis System, Types of draft, Shell, Stiffener, rib slot, Multi-section solid, Removed multi-section solid, Apply Material, Measure, Render	02
07	Introduction To Multi-body concept:- Copy Paste, Paste special, Insert body, Boolean Operations (Add, remove, Intersect), Transformation (Translation, Mirror, Scaling, Affinity).	02
08	Multi-body concept:- Standard example , Negative body concept (Boolean Operations)	02
09	Advance Features:- Parameters, Formula, Relations, Design Table	02
10	Introduction To Drafting & Detailing Theory:- (types Generative – Interactive), Initial Drafting setting, Sheet Background, Views (ortho, ISO), Dimensions (Types-Generate Dimension & Create Dimension).	02
11	Views:- (Aux, Section, Details, Clipping, Broken), View properties, DATUMS & Tolerance	02
12	Annotations:- GD & T, Symbols, Note, Leaders, Table, Symbols (Machining, Roughness, Welding, Custom), Dress-up Toolbar.	02
13	Surfacing Modeling based Plastic Component:- Environment, Tool bars, Surface Creation (Extrude, Revolve, Sphere, Cylinder), Surface Modification, Surface Editing (Trim, Split, Shape Fillet, Close Surface, Thickness).	02
14	Surfacing:- Offset(All 3 types), Fill, Blend, Join, healing, Project-Combine.	02
15	Advanced Surfacing:- Adaptive Sweep, Sweep(ALL), Multi-section Surface	02
16	Wire-frame Modeling:- Point, Line, Planes, Curves, Circle-Conic, standard examples. Use of wire frame modeling	02

17	BIW Templates:- What is BIW, Junction, Diablo, Hole, Mating Flange, Bead, Blend Corner.	02
18	Introduction to Assembly:- Types of assembly approach, Types of Constrains and DOF, placement of components in the Assembly, Manipulating Components, BOTTOM UP Approach	02
19	TOP DOWN Approach:- Part, Product, Component, Space Analysis, Reuse Pattern, Save management.	02
20	Assembly Drafting:- Scene(Exploded View), Bill of material, Balloon creation, Graph Tree Reordering.	02
Reference Books		
1.	CATIA V5 for Designers by Sham Tickoo and Vivek Singh	
2.	An Introduction to CATIA V5 Release 16 by Kirstie Plantenberg	
3.	CATIA V5 Workbook Release 16 by Richard Cozzens	


Principal
 Einstein Academy of Technology & Management
 Bhubaneswar, Khurda


Prof. S.S. Padhi
Course Coordinator



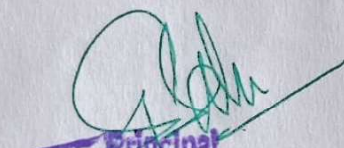
Einstein Academy of Technology and Management
Baniatangi, Bajapur, Khurda-752060
Department of Mechanical Engineering

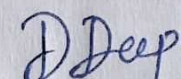
SYLLABUS

Name of the Course	AUTO-CAD	Course Code	UG06A-401
B.TECH.	Branch	Mechanical Engineering	
Semester	3rd(2 nd Year)	Duration	40 Hrs
Course Outcomes: After successful completion of the course, the student will be able to			
CO1	Create both two- and three-dimensional designs/drawings using CAD software		
CO2	Cite and identify technical drafting practices, procedures, and processes according to current ANSI/ISO standards		
CO3	Demonstrate the use of traditional drafting instruments, media and equipment used in industry		
CO4	Sketch and model multi-view drawings		
CO5	Explain the need, relevancy and application of CAD to the various engineering disciplines		
CO6	Create two-dimensional technical drawings, solid models, and surface models, according to current engineering standards		
Sl. No.	Topic(s) covered	No. of hours	
01	Getting Started with AutoCAD - Opening and Creating Drawings - Exploring the AutoCAD interface - Zooming and Panning	02	
02	Basic Drawing & Editing Commands - Using the Mouse, Keyboard, and Enter Key to work quickly and efficiently in AutoCAD - Lines - Circles - Rectangles	02	
03	Projects - Creating a Simple Drawing - Creating Simple Drawings - Using Object Snap Tracking to extrapolate a projected top view - Using Modify tools to arrange an office layout	02	
04	Drawing Precision in AutoCAD - Polar and Ortho Tracking - Entering Coordinates and Angles - Object Snaps and Tracking	02	
05	Making Changes in Your Drawing - Move - Copy - Rotate	02	

	▪ Mirror ▪ Scale ▪ Using the reference option with the Scale Tool	
06	Drawing Templates ▪ Using Template Files (.dwt) to Make New Drawing ▪ Exploring what Settings and Elements are saved with Templates	02
07	Organizing Your Drawing with Layers ▪ Layer States ▪ Properties by Layer ▪ Layer Tools	02
08	Advanced Object Types ▪ Poly-lines ▪ Arcs ▪ Polygons ▪ Ellipses	02
09	Analyzing Model and Object Properties ▪ The Properties Palette ▪ Quick Select ▪ Select Similar ▪ Measure Geometry Tools	02
10	Projects - Drawing Organization & Information ▪ Drill Plate ▪ Furniture Showroom	02
11	Advanced Editing Commands ▪ Trim and Extend ▪ Fillet and Chamfer ▪ Polyline Edit and Spline ▪ Offset and Explode ▪ Join	02
12	Inserting Blocks ▪ The Insert Block Command ▪ Inserting Blocks with Tool Palettes ▪ Dynamic Blocs ▪ Migrating Blocks and other Elements between Drawings with Design Center	02
13	Projects - Creating More Complex Objects ▪ Starting a Floor Plan	02
14	Setting Up a Layout ▪ Using Layouts and Viewports ▪ Scaling Viewports ▪ Model Space vs. Paper Space in Layouts	02
15	Printing Your Drawing ▪ Printing from Layout Tabs ▪ Printing from the Model Tab	02
16	Projects - Preparing to Print ▪ Making Layouts for a Banquette Hall	02
17	Text	02

	▪ The Multiline Text Tool ▪ The Single Line Text Tool ▪ Editing Text ▪ Text in Model Space vs. Paper Space ▪ The Multi-leader Tool	
18	Hatching ▪ The Hatch Command ▪ The Hatch Editor Ribbon Tab ▪ Saving and Applying Hatches with Tool Palettes	02
19	Adding Dimensions ▪ Using Dimensioning Tools ▪ Dimensioning in a Layout Tab vs. the Model Tab ▪ Using Dimension Styles ▪ Editing Dimensions	02
20	Projects - Annotating Your Drawing ▪ Dimensioning a Mechanical Drawing	02
Reference Books		
1.	Autodesk AutoCAD Certified User Study Guide By William G. Wyatt Ed. D.	
2.	Learn AutoCAD by Sunil K. Pandey	
3.	An Introduction to AutoCAD for Beginners by Autodesk	


Principal
 Einstein Academy of Technology & Management
 Bhubaneswar, Khurda


 Prof. D.R. Deep
Course Coordinator



Einstein Academy of Technology and Management

Baniatangi, Bajapur, Khurda-752060

Department of Mechanical Engineering

SYLLABUS

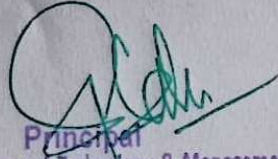
Name of the Course	Non-Destructive Testing	Course Code	UG06A-301
B.TECH.	Branch	Mechanical Engineering	
Semester	5 th (3 rd Year)	Duration	40 Hrs

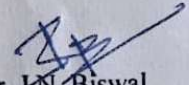
Course Outcomes: After successful completion of the course, the student will be able to

CO1	Apply the various NDT techniques to identify the defects
CO2	Understand for defects and characterization of industrial components
CO3	Identifying the nature and quantifying the defects
CO4	Understand the instruments and interpretation on techniques
CO5	Know the influence of different NDT Tests
CO6	Familiar with different applications of NDT

Sl. No.	Topic(s) covered	No. of hours
01	Introduction: Non-Destructive testing - Relative Merits and Limitations - NDT vs Mechanical testing	02
02	Dry technique and Wet technique - Principle - Applications - Advantages and Limitations	02
03	Dyes, Developers, Cleaners - Fluorescent penetrant test - Liquid penetrant inspection	02
04	Radiography: X-rays and Gamma rays - Properties of X-rays relevant to NDT - Absorption of rays - Scattering	02
05	Types and use of Filters, screens - Geometric factors - Film type and Processing	02
06	Characteristics of films graininess - Density, Speed, Contrast - Characteristic curves	02
07	Characteristics of Gamma rays - Fluoroscopy - X-ray	02
08	Radiography, Safety with X-rays and Gamma rays	02
09	Ultrasonic Testing - Types of Ultrasonic Waves - Principles of wave propagation	02
10	Characteristics of ultrasonic waves, Attenuation	02
11	Production of ultrasonic waves, Couplants	02
12	Inspection methods - Pulse echo - Transmission and - Resonance techniques	02
13	Thickness measurement - Types of scanning - Test block - Reference blocks	02

14	Techniques for Specific Purposes ▪ Magnetic particle inspection ▪ Principles, ▪ Applications	02
15	Magnetization methods ▪ Magnetic particles ▪ Demagnetization	02
16	Eddy current testing	02
17	Thermal inspection ▪ Principle ▪ Application	02
18	Instrumentation of Thermal Inspection ▪ Holography ▪ Acoustic Emission	02
19	Pressure and Leak Testing	02
20	Chemical Spot Testing, Spark Testing	02
Reference Books		
1.	Dr. V. Jayakumar, Dr. K. Elangovan "Non-Destructive Testing of Materials" Lakshmi Publications, Chennai	
2.	ASM Metals Handbook, "Non-Destructive Evaluation and Quality Control", American Society of Metals, Metals Park, Ohio, USA	
3.	Ravi Prakash, "Non-Destructive Testing Techniques", New Age International Publishers	


Principal
Einstein Academy of Technology & Management
Bhubaneswar, Khurda


Dr. J.N. Biswal
Course Coordinator



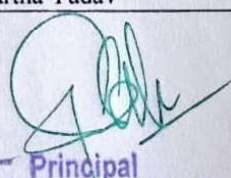
Einstein Academy of Technology and Management

Baniatangi, Bajapur, Khurda-752060

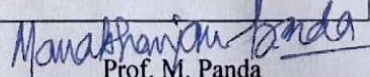
Department of Mechanical Engineering

SYLLABUS

Name of the Course		Heating, Ventilation & Air Conditioning	Course Code	UG06A-201
B.TECH.		Branch	Mechanical Engineering	
Semester		3 rd	Duration	40 Hrs
Course Outcomes: After successful completion of the course, the student will be able to				
CO1	Understand the technology, concepts and terminology in the design of HVAC systems			
CO2	Recognize different types, components and accessories of HVAC systems			
CO3	Specify correctly any type of HVAC systems			
CO4	Calculate the thermal resistance of the building envelope			
CO5	Calculate the heating loads, cooling load using RTS method			
CO6	Explain different processes that undergoes the water-vapour/air mixture in most common HVAC systems			
Sl. No.	Topic(s) covered			No. of hours
01	Introduction to Heating, Ventilation and Air Conditioning System Loads (HVAC), HVAC Systems overview			02
02	Units of HVAC systems, HVAC System Classifications			02
03	Heating Systems Types, Heat Sources, Types of heating systems			02
04	Central Heating System, Furnace, Hot water & steam boiler			02
05	Heat Pump, In Floor or Under Floor Heating, Local heating Systems			02
06	Air Conditioning System Configurations Decentralized Systems (Individual Room Systems), Split Cooling Units			02
07	Semi- centralized systems (packaged systems)			02
08	One piece systems (Unitary Packaged Systems)			02
09	Packaged Air Conditioners with Air Cooled Condensers			02
10	Centralized systems (Central Hydronic systems), Centralized Ducted "All – Air" Systems			02
11	Types of "All -Air" Systems, Constant Volume Systems (CAV)			02
12	Dual Duct Systems, Variable Volume Systems			02
13	Centralized Fluid Based Hydronic Systems, Combined (Hybrid) Water and Air Systems			02
14	Special types of Air cooling systems, Evaporative cooling systems			02
15	Central Air Washer or Central Evaporative Air Cooling Systems			02
16	HVAC Systems Main Equipment, Heating systems main equipments, Cooling systems main equipment			02
17	Chillers & Compressors, Cooling Towers			02
18	Air Handling Units & Fan Coil Units			02
19	HVAC Control systems, Sensors, Controllers, Controlled devices			02
20	Source of energy, Type of Control Systems			02
Reference Books				
1.	Principle of Heating Ventilating and Air Conditioning R.H., Howell, H.J., Sauer Jr., and W.J., Coad, American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc., Atlanta			
2.	Comprehensive HVAC System Design, by N. C. Gupta			
3.	A text book on HVAC: Heating, Ventilation & Air Conditioning: A Detailed Study on Centralized Air-Conditioning Systems by J. Siddhartha Yadav			


Principal

Einstein Academy of Technology & Management
Bhubaneswar, Khurda


Prof. M. Panda
Course Coordinator



**Einstein Academy of Technology and Management (EATM)
Bhubaneswar, Baniatangi, Bajpur, Khurda-752060**

DEPARTMENT OF MBA

Course Name: Data Analysis using SPSS

Course Objectives:

- To introduce the concept of Research and Research Methodology.
- To enable the students to understand the Quantitative and Qualitative Methods for conducting research.
- To make students understand Tabular and Graphical Description of Data.
- To enable the students to use SPSS for solving the research data.
- To enable the students to understand the Structure and Components of the Research Report.
- To enable the students to write the research report using hypothetical data.

Course Outcomes:

- Familiarization with Research and research problems.
- Understanding of the Quantitative and Qualitative Methods of research.
- Ability to represent data in tabular as well as graphical manner.
- Skill to write Research paper.

Syllabus

Introduction to data, presentation of raw data, graphs and diagrams (Pie chart, Bar chart, and Histogram), measures of central tendency (Mean, Median and Mode) and dispersion (Standard deviation), correlation (Pearson's and rank correlation), linear regression.

Elements of a spreadsheet (Excel or Google sheet or Open Office or Libre Office), creation of worksheets, editing, formatting, and saving, introduction to functions in a spreadsheet, if function, freeze panes, vlookup, hlookup, sorting, filter and creation of pivot tables.

Data analysis using spreadsheets - graphs and diagrams (Pie chart, Bar chart, and Histogram), summary statistics (Mean, Median, Mode, Standard deviation), calculation of correlation coefficient and performing a simple linear regression.

Data analysis using SPSS - the creation of data file, editing, saving, graphs and diagrams (Pie chart, Bar chart, and Histogram), summary statistics (Mean, Median, Mode and Standard deviation), calculation of correlation coefficient and performing a simple linear regression.

Subject: Data Analysis using SPSS	
Class Day	Practical Topics
Class 1	Introduction to data
Class 2	Presentation of raw data
Class 3	Graphs and diagrams (Pie chart, Bar chart, and Histogram)
Class 4	Measures of central tendency (Mean, Median and Mode)
Class 5	Dispersion (Standard deviation),
Class 6	Correlation (Pearson's and rank correlation),
Class 7	linear regression
Class 8	Elements of a spreadsheet (Excel or Google sheet or Open Office or Libre Office),
Class 9	Creation of worksheets, editing, formatting, and saving
Class 10	Introduction to functions in a spreadsheet
Class 11	If function, freeze panes, vlookup, hlookup, sorting, filter and creation of pivot tables
Class 12	Data analysis using spreadsheets - graphs and diagrams (Pie chart, Bar chart, and Histogram),
Class 13	Summary statistics (Mean, Median, Mode, Standard deviation),
Class 14	Calculation of correlation coefficient and performing a simple linear regression
Class 15	Data analysis using SPSS - the creation of data file, editing, saving, graphs and diagrams (Pie chart, Bar chart, and Histogram),
Class 16	Summary statistics (Mean, Median, Mode and Standard deviation),
Class 17	Calculation of correlation coefficient and performing a simple linear regression
Class 18	Independent Chi square Test, Mann- Whitney test, Wilcoxon signed rank test, Kruskal-Wallis test.
Class 19	Logistic Regression and Discriminant Analysis
Class 20	Factor Analysis, Cluster Analysis.


Principal
Einstein Academy of Technology & Management
Bhubaneswar, Khurda


Course Coordinator



Einstein Academy of Technology and Management (EATM)
Bhubaneswar, Baniatangi, Bapjur, Khurda-752060

DEPARTMENT OF MBA

Course Name: Data Analysis using SPSS

Course Objectives:

- To introduce the concept of Research and Research Methodology.
- To enable the students to understand the Quantitative and Qualitative Methods for conducting research.
- To make students understand Tabular and Graphical Description of Data.
- To enable the students to use SPSS for solving the research data.
- To enable the students to understand the Structure and Components of the Research Report.
- To enable the students to write the research report using hypothetical data.

Course Outcomes:

- Familiarization with Research and research problems.
- Understanding of the Quantitative and Qualitative Methods of research.
- Ability to represent data in tabular as well as graphical manner.
- Skill to write Research paper.

Syllabus

Introduction to data, presentation of raw data, graphs and diagrams (Pie chart, Bar chart, and Histogram), measures of central tendency (Mean, Median and Mode) and dispersion (Standard deviation), correlation (Pearson's and rank correlation), linear regression.

Elements of a spreadsheet (Excel or Google sheet or Open Office or Libre Office), creation of worksheets, editing, formatting, and saving, introduction to functions in a spreadsheet, if function, freeze panes, vlookup, hlookup, sorting, filter and creation of pivot tables.

Data analysis using spreadsheets - graphs and diagrams (Pie chart, Bar chart, and Histogram), summary statistics (Mean, Median, Mode, Standard deviation), calculation of correlation coefficient and performing a simple linear regression.

Data analysis using SPSS - the creation of data file, editing, saving, graphs and diagrams (Pie chart, Bar chart, and Histogram), summary statistics (Mean, Median, Mode and Standard deviation), calculation of correlation coefficient and performing a simple linear regression.

Subject: Data Analysis using SPSS	
Class Day	Practical Topics
Class 1	Introduction to data
Class 2	Presentation of raw data
Class 3	Graphs and diagrams (Pie chart, Bar chart, and Histogram)
Class 4	Measures of central tendency (Mean, Median and Mode)
Class 5	Dispersion (Standard deviation),
Class 6	Correlation (Pearson's and rank correlation),
Class 7	linear regression
Class 8	Elements of a spreadsheet (Excel or Google sheet or Open Office or Libre Office),
Class 9	Creation of worksheets, editing, formatting, and saving
Class 10	Introduction to functions in a spreadsheet
Class 11	If function, freeze panes, vlookup, hlookup, sorting, filter and creation of pivot tables
Class 12	Data analysis using spreadsheets - graphs and diagrams (Pie chart, Bar chart, and Histogram),
Class 13	Summary statistics (Mean, Median, Mode, Standard deviation),
Class 14	Calculation of correlation coefficient and performing a simple linear regression
Class 15	Data analysis using SPSS - the creation of data file, editing, saving, graphs and diagrams (Pie chart, Bar chart, and Histogram),
Class 16	Summary statistics (Mean, Median, Mode and Standard deviation),
Class 17	Calculation of correlation coefficient and performing a simple linear regression
Class 18	Independent Chi square Test, Mann- Whitney test, Wilcoxon signed rank test, Kruskal-Wallis test.
Class 19	Logistic Regression and Discriminant Analysis
Class 20	Factor Analysis, Cluster Analysis.


Principal
Einstein Academy of Technology & Management
Bhubaneswar, Khurda


D. R. Sabal
Course Coordinator

18/11/2020
 D. R. Sabal
 Course Coordinator