



SHIRDI SAI ENGINEERING COLLEGE

Anekal, Bangalore-562106

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Academic Year: 2013-14

Syllabus

Certificate Course Name: LABVIEW & ITS APPLICATIONS

Course Code: 13ECCC02

Duration:30 Hours

Unit 1 Navigating Lab VIEW & Creating Your First Application (08 Hrs)

The Lab VIEW environment , Creating and using Lab VIEW projects, The Lab VIEW front panel and block diagram Searching for controls, VIs, and functions, The dataflow programming model of Lab VIEW, Recognizing different data types, Tools for developing, cleaning and organizing your Vis,Using Express VIs to build a basic VI.

Unit 2 Troubleshooting and Debugging Vis Using Loops (08 Hrs)

Correcting broken Vis, Using common debugging techniques, Addressing undefined or unexpected data, Implementing error checking and error handling, Using structures like the While Loop and For Loop, Adding software timing to your code ,Sharing data between loop iterations, Plotting data to a waveform chart.

Unit 3: Creating and Leveraging Structures& Modularity (SubVIs) (09 Hrs)

Creating and using array controls and indicators, Creating and using cluster controls and indicators, Using Decision-Making Structures, Creating and using Case structures,Creating and using Event structures, Basics of modular programming, Creating an icon and connector pane, Using a VI as a subVI, Creating subVIs from an existing VI

Unit 4: Acquiring Measurements with Hardware, Accessing Files in LabVIEW (05 Hrs)

Programming with the DAQmx API, Instrument control and programming with instrument drivers, High-level and low-level file I/O functions, Implementing File I/O functions to read write data to files, Using Sequential and State Machine Programming.



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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Academic Year: 2013-14

Syllabus

Certificate Course Name: Analysis of Electrical Circuits Using MATLAB

Course Code: 13EECC01

Duration: 30 Hours

Unit 1: Introduction to MATLAB

(08 Hrs)

Introduction, Starting and Quitting MATLAB, MATLAB Desktop, Desktop Tools, Getting started, Mathematical functions; MATLAB Fundamentals - MATLAB Basic Operations, Matrix Operations, Array Operations, Complex Numbers, The Colon Symbol (:), M-Files - Script Files, Function Files; MATLAB Plotting Commands - Graph Functions, X-Y Plots and Annotations, Logarithmic and Polar Plots, Screen Control; MATLAB Control Statements - For Loops, If Statements, While Loop, Input/Output Commands

Unit 2: Introduction to programming in MATLAB

(06 Hrs)

Introduction, M-File Scripts, M-File functions, Input/Output Commands, Control flow and operators, Debugging M-files, commands, Main characteristics of MATLAB

Unit 3: Analysis of Circuits and Theorems using MATLAB

(12 Hrs)

DC Circuit Analysis - Nodal and loop analysis, Maximum Power Transfer analysis; Transient Analysis - RC network, RL network, RLC circuit, State variable approach, ; AC Circuit Analysis and Network functions - Steady state analysis and AC power calculation, single and three-phase AC circuits, network characteristics, frequency response; Two-port networks Analysis - Two-port network representations, interconnection of two-port Networks, terminated two-port networks; Fourier Analysis - Fourier series, Fourier transforms, discrete and fast Fourier transforms; Energy Storage Components Analysis – Capacitors, Inductors and Inductors

Unit 4: Testing Electrical Circuit Methods and Theorems Analysis using MATLAB

(06 Hrs)

KVL, KCL, Resistor combinations, Series and Parallel circuits, Delta-Wye circuits, Superposition, Thevenin theorem, maximum power transfer theorem, AC three-phase circuits, Variable frequency response with Passive and active filters, second order filters, Frequency response with oscilloscope, Resonant circuits.



SHIRDI SAI ENGINEERING COLLEGE
Anekal, Bangalore-562106

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Academic Year: 2014-15

Syllabus

Certificate Course Name: JAVA PROGRAMMING

Course Code: 14CSCC02

Duration: 30 Hours

Module 1: Fundamentals of JAVA

9 Hours

Fundamentals of Object-Oriented Programming, Java Evaluation, Overview of Java Language, Data Types in java, Variables in java, Constants in java, Operators in java, Decision Making in java

Module 2: Classes and Objects

8 Hours

Java, Control access permission to member class, Character Class in java, Encapsulation, Constructor classes, Garbage collection

Module 3: Arrays and Strings

5 Hours

Array, Multidimensional arrays, String, String Buffer Class Methods, Vector in Java, Programming exercises.

Module 4: Inheritance and Polymorphism

8 Hours

Inheritance in java, Polymorphism in Java, Abstract class and Methods in java, Interface in java, Packages in java, Multithreading in java, Event handling.



SHIRDI SAI ENGINEERING COLLEGE

Anekal, Bangalore-562106

Department of Mechanical Engineering

Academic year: 2014-15

Syllabus

Certificate Course Name: BASICS OF THERMAL POWER GENERATION

Course Code : 14MECC01

Duration: 30 Hours

Module 1: Fundamentals Of Energy - Energy Resources & Technology 06Hours

Renewable and non-renewable energy sources, Types of power generation General layout of modern thermal power plant , Selection of site for thermal power plant, Major Components of a Thermal Power Plant

Module 2: High Pressure Boilers & Accessories 08 Hours

Unique features and advantages of high pressure boilers, Fire Tube Boiler principle of working, Water Tube boilers working principle, Need of Mountings and Accessories for a boilers , Water level indicator, pressure gauge , Safety valve, blow off cock, fusible plug , Accessories Economizer, Air preheater, super heater Corrosion in boilers and its prevention.

Module 3: Coal & Ash Handling Systems 09 Hours

Coal and Ash handling system introduction, Coal storage and burning system, Pulverized fuel handling systems,, Pulverized mills- ball mill, Bowl mill, Ball &race mill, Necessity of ash disposal with respect to state and central pollution control rules, Mechanical, Hydraulic ash handling system, pneumatic and steam jet ash handling system, Dust collection and its disposal, Mechanical dust collector, Electrostatic precipitator

Module-4: Draught System & Cooling Towers 03 Hours

Natural draught, Forced, Induced and balanced draught, Necessity of cooling ponds and cooling towers, Types of cooling towers, cooling ponds

Module -5: Feed Water Treatment, Pollution & its Control 04 Hours

Necessity of feed water treatment, Different impurities found in feed water, Effect of impurities, pH & its role in corrosion and scale formation, Reverse osmosis process, Sea water treatment using reverse osmosis, Air pollution and water pollution by thermal power plants and its control.



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Anekal, Bengaluru

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Academic Year:2015-16

Syllabus

Certificate Course Name: INTRODUCTION TO IOT

Course Code: 15CSCC02

Duration:30 Hours

Module 1: Basics of IOT

(6 Hrs)

What is IoT, Genesis of IoT, IoT and Digitization, IoT Impact, Convergence of IT and IoT, IoT Challenges, IoT Network Architecture and Design, Drivers behind New Network Architectures, Real time applications of IOT.

Module2: Basics of Networking

(6Hrs)

Communication Protocols, Basic concepts of Sensor Networks, Applications of sensors in real life, Machine-to-Machine Communications.

Module 3: Introduction to Arduino Programming

(6Hrs)

Introduction to Arduino Programming, Interoperability in IoT, hands on session, Integration of Sensors and Actuators with Arduino with hands on session.

Module 4: Introduction to Python Programming

(6Hrs)

Introduction to Python Programming, hands on session, Introduction to Raspberry Pi, Implementation of IoT with Raspberry Pi-Hands on session.

Module5: Introduction to Cloud Computing

(6Hrs)

Introduction to cloud computing, Hands on session, Overview of Fog Computing, Applications of IoT in Agriculture and Health care.



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Department of Mechanical Engineering

Academic year: 2015-16

Syllabus

Certificate Course Name: BASICS OF METAL JOINING PROCESSES

Course Code : 15MECC01

Duration: 30 Hours

Module 1: Introduction of Metal Joining Process

08 Hours

Fundamentals Of Metal joining ,Classification by metal joining method Joining process as a manufacturing route. Relevance of joining process to metallurgy. Classification of joining process. Riveting, Bolting, Shrink fitting, Folding, Bonding. Safety aspects in Metal joining processes.

Module 2:Fusion welding

05 Hours

Arc welding welding procedure, Joint design and edge preparation, welding codes for weld position. Welding symbols. Selecting groove geometry, Welding parameters, welding process, welding consumable, cleanliness, flux, electrode. Gas welding

Module 3: Modern Welding Processes

03 Hours

Electron beam welding, Laser welding, Ultrasonic welding,

Module 4: Resistance welding

07 Hours

Resistance spot welding, Projection welding, Seam welding, Upset welding Flash welding, Explosion welding , Cold pressure welding, Friction welding, Friction stir welding (FSW) Diffusion welding,

Module 5: Basic operational steps of Soldering & Brazing

07Hours

Introduction to Brazing and Soldering, Difference of Soldering and Brazing, methods of brazing Soldering process Role of Flux, Types of Flux, and Metallurgical aspects of soldering and brazing. Applications of soldering and brazing in Engineering.



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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Academic Year: 2016-17

Syllabus

Certificate Course Name: High Power Converters

Course Code: 16EECC02

Duration: 35 Hours

Module-1: Power Electronic Systems & Multi-Pulse Diode Rectifier (8 Hrs)

Power semiconductor devices and circuits, Characteristics and specification of switches, Phase shifting transformer. Multiphase star rectifier, three phase bridge rectifier, three phase bridge rectifier with RL load, three phase rectifier with a highly inductive load, Rectifier circuit design, output voltage with LC filter.

Module 2: Multi-Pulse SCR Rectifier (4 Hrs)

Three-phase full converters with RL load, Twelve –pulse converters, Effect of load and source inductance.

Module 3: Multilevel Inverters (6 Hrs)

Introduction, Multilevel concept, Types of multilevel inverters such as diode clamped multilevel inverter, Flying-Capacitor multilevel inverter, Cascaded multilevel inverter, Applications, PWM current source inverters.

Module 4: DC-DC Converter (4 Hrs)

Introduction, performance parameter of DC-DC converters, Switching mode regulators such as Buck, Boost and Buck-Boost regulators.

Module 5: AC Voltage Controllers & UPS (7 Hrs)

Introduction, performance parameters of AC voltage controllers, single phase full wave controller with resistive loads and inductive loads, three phase full wave controllers, three phase full wave delta connected controllers, Single phase and three phase Cyclo-converters, Matrix converter. Un-interruptible Power Supply (UPS) - Switched mode DC and AC power supplies.

Module 6: Protection of Devices and Circuits**(6 Hrs)**

Introduction, Cooling and heat sinks, Thermal modelling of power switching devices, Snubber circuit, Reverse recovery transients, supply and load side transients, Voltage protection by selenium diodes and metal oxide varistors, Current protections, fusing, fault current with AC & DC source.



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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Academic year: 2016-17

Syllabus

Certificate Course Name: IOT IN REAL TIME APPLICATIONS

Course Code: 16CSCC02

Duration: 30 Hours

Module 1: Basics of IOT

6 Hours

What is the Internet of Things, Machine to Machine / User-less Communication, Components of an IoT Solution, Open Source and Commercial Examples.

Module 2: IoT specialization

6 Hours

IoT specialization: Industrial, Medical/ Healthcare, Automotive, Energy/Utilities, Financial, Analog and Digital I/O Basics, Traditional Data Storage, Sensors and Data Collection.

Module 3: Connectivity Options

6 Hours

Connecting Sensors to the Cloud, Collecting and Storage of IoT, Sensor Data, Data Aggregation, Processing IoT Data, Analysis and Visualization of Data.

Module 4: Big Data and IoT

6 Hours

Linux and Windows-Based IoT, On-Going IoT Operations, Combining IoT Data with Static Data.

Module 5: Scripting and Programming

6 Hours

Scripting and Programming with IoT Data, IoT Strategies, IoT Governance and Management Strategies, What's Next in IoT.



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Department of Mechanical Engineering

Academic year: 2017-18

Syllabus

Certificate Course Name: PROGRAMMING AND SIMULATION ON CNC

Course Code :17MECC01

Duration:30 Hours

Module 1:Introduction to NC technology and CNC programing 02 Hours

NC machines Conventional Machines Elements Of NC Machine, CNC Machines, Absolute And Incremental Co Ordinate System.

Module 2: Application Numerical Control, Advantages, & Disadvantages G code & M codes , Machine setting, part programming Basics 07 Hours

Preparatory Codes, Miscellaneous Codes, Syntax For Turning Programs, Preparatory Codes, Miscellaneous Codes, Syntax For CNC Programs & Canned Cycles. Job Setting, Machine Selection, Simulation Environment, Syntax Checking, Co-Ordinate Points, Data Required For Programming, Structure Of CNC Part Programming,

Module 3:CNC Part programming, simulation- Lathe 10 Hours

Part Program On Simple Turning Operation Hands On Practice Of Simple Turning, Hands On Practice Of Simple Facing Hands On Practice Of Taper Turning. Syntax & Program For BOX Turning, BOX Facing, Hands On For BOX Turning, BOX Facing, Syntax For Multiple Turning Cycle, Programs On Multiple Turning Cycle Hands On Part Programs Using Multiple Turning Cycle. Syntax & Program For Grooving, Threading Operations Hand On Exercises For Grooving, Threading Operations

Module 4: CNC Part programming, simulation –Milling 07 Hours

Machining Centers, Tools, Axis , Motion Control For Milling Machine G Codes & M Codes For Milling Simple Program. Program For Contouring In Absolute And Incremental, Syntax And Program For Pocket Milling, Hands On Exercise For Pocket Milling Syntax And Program For Drilling Operations, Hands On Exercise For Drilling Operations,

Module 5: Hands on simulation Exercises

04 Hours

For Box Turning, Box Facing, Grooving, Threading. Exercises for Multiple Turning Cycle. Exercises for Contouring, Pocketing, Drilling. Demo On Lathe And Milling Centres.



DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Academic Year: 2017-18

Syllabus

Certificate Course Name: EMBEDDED SYSTEM DESIGN USING ARDUINO

Course Code: 17ECCC01

Duration:30 Hours

Module 1: Introduction & Hardware Description (07 Hrs)

Course Introduction, Hardware Overview, Download and Install the Arduino IDE, Arduino IDE and Sketch Overview, Understanding Arduino Syntax .

Module 2: Understanding of Arduino variables (12 Hrs)

Basics Understanding and Using Variables , Blink an LED , digital Read() , Serial Port Communication, analog Read(),Serial Port Communications, Reading Analog Pins and Converting the Input to a Voltage,Fade an LED with Pulse Width Modulation, If-Else Statement, Comparison Operators and Conditions , For Loop Iteration, How to Use Arrays , Switch Case Statement and Using a Keyboard for Data Collection , While Statement.

Module 3: Learning of Arduino ports (06 Hrs)

Blink an LED Without using the delay() Function , Using Buttons , State Change Detection and the Modulo Operator, Debouncing a Button , Analog I/O and Serial Communications , Analog Input.

Module 4: Learning of Interfacing (05Hrs)

Interfacing with LCD Interfacing with Motion