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KUPPAM - 517 425, Chittoor Dist., A.P. 2: 08570 - 256966 (O), 256977 (F)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

### Contents

Hands on Training on "VLSI Design and Verification" (21ECVA02)

Module1:

VLSI Design Flow, Introduction to IC technology, Introduction to IC technology, Fabrication process: nMOS, pMOS and CMOS Aspects of MOS transistor.

Module2:

Conductance and Figure of Merit, Pull-up to Pull-down Ratio for nMOS, Comparison between CMOS and BiCMOS technology, Line codes MOS Layers

Module3:

Stick Diagrams, Design Rules and Layout, Layout Diagrams for MOS circuits, Sheet Resistance, Area Capacitance of Layers.

Module4:

Standard unit of capacitance, The Delay Unit, Inverter Delays, Driving large capacitive loads,

Module5:

Scaling of MOS Circuits Scaling models and scaling factors, Scaling factors for device parameters .

Program Coordinator

Dr. S. Sudhaker Babu Principal Kuppam Engineering College P.B. Natham V HOD

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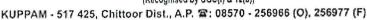
ELECTRONICS & COMMUNICATION ENGG

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

### **Contents**

### Hands on Training on "Drone for Agriculture" (21ECVA03)

#### Module 1:

Introduction to MEMS, Microsystems, Introduction to Micro sensors, MEMS Materials Properties Micro sensors, Market Survey, Application of MEMS

#### Module 2:

Microelectronic Technology for MEMS, Micromachining Process, Fabrication of Micro machined Microstructure, Micro stereolithography, Micro Sensors

### Module 3:

Techniques and Microstructure, MEMS Micro sensors, herbal Micro sensors, Mechanical Micro machined Micro sensors, MEMS Pressure Sensor

#### Module 4:

MEMS Flow Sensor, MEMS Inertial Sensors, MEMS Gyro Sensor, MEMS Accelerometers, Micro machined Micro accelerometers for MEMS

#### Module 5:

MEMS Accelerometers for Avionics, Temperature Drift and Damping Analysis, MEMS Capacitive Accelerometer, MEMS for Space Application, Accelerometer Process.

Program Coordinator

HOD
HEAD OF THE DEPT.
ELECTRONICS & COMMUNICATION ENGG
KUPPAM ENGINEERING COLLEGE
KUPPAM - 517 425

Dr. S. Sudhakar Babu

Kuppam Engineering College P.B. Natham, Kuppam - 517 425



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### **Contents**

# Hands on Training on "LabVIEW & 5G Software Defined Radio" (21ECVA01)

Module1:

Source Coding Systems, sampling process, quantization, quantization noise, conditions for optimality of quantizer,

Module2:

Encoding, Micromachining Process, Pulse-Code Modulation (PCM), Line codes Micro Sensors

Module3:

Differential encoding, Regeneration, Decoding & Filtering, Baseband Pulse Transmission, Properties of Matched filter.

Module4:

Matched filter for rectangular pulse, Waveguides (Microwave Transmission lines), Introduction, Rectangular waveguides, expressions for TE and TM modes, Wave propagation in the guide.

Module5:

Phase and group velocities, Power transmission and attenuation, Waveguide current and mode excitation, Wave propagation, waveguide resonators – problem solving, Introduction to scattering parameters and their properties.

Program Coordinator

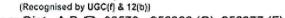
Dr. S. Sudhakar Vabu Principal

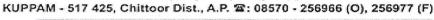
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### DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

### Contents

### Hands on Training on "Introduction to IoT and Arduino" (20ECVA01)

### Module 1:

Terminology, Classification, Temperature sensors, Thermoresistive, Resistance, temperature detectors.

### Module 2:

Silicon resistive thermistors, Semiconductor, Piezoelectric, Capacitive, Electrical conductivity, Thermal conductivity

### Module 3:

Pressure and Force sensors, Piezo resistive, Piezo resistive, Capacitive, Piezoelectric, Strain gauge.

#### Module 4:

Capacitive occupancy, Inductive and magnetic, potentiometric, Position, displacement, Basic concepts of MEMS design.

### Module 5:

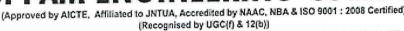
Beam/diaphragm mechanics, electrostatic actuation, Process design of MEMS based sensors and actuators, Touch sensor Distribution level, Applications

Program Coordinator

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### **Contents**

Hands on Training on "VLSI Design using Verilog" (19ECVA02)

### Module1:

Brief Introduction to IC technology, Electrical Properties of MOS and Bi CMOS Circuits,  $I_{DS}$  -  $V_{DS}$  relationships, MOS transistor Threshold Voltage, figure of merit- $\omega_0$ 

### Module2:

Transconductance -  $g_m$ ,  $g_{ds}$ , Pass transistor, VLSI Circuit Design Processes, MOS Layers, Stick Diagrams.

### Module3:

Design Rules and NMOS and CMOS Inverters, Scaling of MOS circuits, Limitations of Scaling, Logic gates and other complex gates, Switch logic.

### Module4:

Alternate gate circuits, Basic Circuit Concepts, Basic Circuit Concepts, Sheet Resistance Rs, concepts to MOS, Area Capacitances calculations

### Module5:

Inverter Delays, Driving large Capacitive Loads, Wiring Capacitances, Fan-in and fan-out, Subsystem Design.

Program Coordinator

Dr. S. Sudhakar Babu Principal

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### **Contents**

### Hands on Training on "Embedded system design using TIVA Launchpad

### Module1:

Measurement Error, Accuracy and Instrument grades, Electro-mechanical instruments, electromechanical ammeters, voltmeters and ohmmeters.

### Module2:

Electromechanical wattmeter , energy meter, Resistance Measurement, Ampedance Measurement, AC Bridges.

### Module3:

Potentiometers, DC and AC, Instrument transformers, CT & PT, Magnetic Measurement.

### Module4:

Analog Instrumentation Basics, Analog Instrumentation, Digital Instrumentation Basics, Digital Instrumentation, Signal and Function Generators.

### Module5:

Spectrum Analyzer, Oscilloscope and Electronic probes, Introduction, Block diagram of CRO, Digtal CRO, Deflection Assembly.

Program Coordinator

Dr. S. Sudhakar Babu Principal Kunnam Engineering College

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### Contents

Hands on Training on "Intellectual property rights" (18ECVA02)

### Module 1:

Types Of Intellectual Property, International Organizations, Agencies And Treaties, Importance Of Intellectual PropertyRights, Purpose And Function Of Trade Marks.

### Module 2:

Acquisition Of Trade MarkRights, Protectable Matter, Selecting And Evaluating Trade Mark, Registration Processes, Law Of Copy Rights

### Module 3:

Fundamental Of Copy Right Law, Originality Of Material, Right Of Reproduction, Rights To Perform The Work Publicly, Copy Right Ownership Issues.

### Module 4:

Copy Right Registration, Notice Of Copy Right, International Copy Right Law, Law Of Patents, Foundation Of Patent Law.

### Module 5:

Trade Secrete Law, Determination Of Trade Secrete Status, Protection For Submission, Misappropriation Right Of Publicity, False Advertising.

Program Coordinator

Dr. S. Sudhakar Babu Principal

Kuppam Engineering College P.B. Natham, Kuppam - 517 425 HOD OF THE DE

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### Contents

Hands on Training on "Product Development using IOT" (18ECVA01)

Module1:

Introduction to Internet of Things, physical design of IoT, logical design of IoT, IoT enabling Technologies, IoT levels.

Module2:

Domain Specific IOTs, Home Automation, Cities, Environment, Energy, Retail, Logistics.

Module3:

Agriculture, Industry, Health & Life Style, M2M & System Management, NETCONF-YANG, M2M.

Module4:

Difference between IOT and M2M, SDN and NFV for IOT, Software defined Networking, Need for IOT Systems Management, Network Function Virtualization

Module5:

Simple Network Management, Limitations of SNMP, Network Operator Requirements, NETCONF, Logical Design using Python.

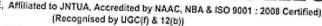
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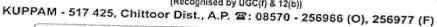
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ELECTRONICS & COMMUNICATION ENGS
KUPPAM ENGINEERING COLLEGE
KUPPAM - 517 425

Dr. S. Sudhaka Babu Principal Kumam Engineering College

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### Contents

### Hands on Training on "ROBOTICS" (17ECVA01)

### Module1:

Introduction to MEMS, Microsystems, Introduction to Micro sensors, MEMS Materials Properties, Micro sensors, Market Survey, Application of MEMS.

#### Module 2:

Microelectronic Technology for MEMS, Micromachining Process, Fabrication of Micro machined Microstructure, Microstereolithography, Micro Sensors.

### Module 3:

Techniques and Microstructure, MEMS Micro sensors, hermal Micro sensors, Mechanical Micro machined Micro sensors, MEMS Pressure Sensor,

### Module 4:

MEMS Flow Sensor, MEMS Inertial Sensors, MEMS Gyro Sensor, MEMS Accelerometers, Micro machined Micro accelerometers for MEMS.

### Module 5:

MEMS Accelerometers for Avionics, Temperature Drift and Damping Analysis, MEMS Capacitive Accelerometer MEMS for Space Application, Accelerometer Process.

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