



# KUPPAM ENGINEERING COLLEGE

(Approved by AICTE, Affiliated to JNTUA, Accredited by NAAC, NBA & ISO 9001 : 2008 Certified)  
(Recognised by UGC(f) & 12(b))



KUPPAM - 517 425, Chittoor Dist., A.P. ☎: 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. Sudhakar Babu  
Principal  
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## 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.

  
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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

## 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.

  
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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

  
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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

## 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  $R_s$ , concepts to MOS, Area Capacitances calculations

#### Module5:

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

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**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

## 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, Digital CRO, Deflection Assembly.

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

## Contents

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

#### Module 1:

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

#### Module 2:

Acquisition Of Trade Mark Rights, 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 Secret Law, Determination Of Trade Secret Status, Protection For Submission, Misappropriation Right Of Publicity, False Advertising.

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

## 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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### 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:

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