R K COLLEGE OF ENGINEERING

(Approved by AICTE, New Delhi & Affiliated to JNTUK, Kakinada & SBTET, Amaravati)
(An ISO 9001:2015 Certified Institution)
Kethanakonda (V), Ibrahimpatnam (M), Vijayawada, AMARAVATI - AP - 521456

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE OUTCOMES (COs)

Course Outcomes (COs) describe what students can able to do after completion of the course.

S.No	Year-Sem	Course Code	Course Name	Course Outcomes After completion of the course student can able to
1	I-I	PC	RTL Simulation and Synthesis with PLDs	**CO1:** Develop the Verilog HDL to design a digital circuit.
				CO2: Appreciate the analysis of finite state machine of a controlling circuit
				CO3: Verify the functionality of the ASIC Design Flow
				CO4: Understand the Static Timing Analysis and clock issues in digital circuits
				CO5: Verify the functionality of the digital designs using PLDs.
2	I-I	PC	Microcontrollers and Programmable Digital Signal Processors	**CO1:** Compare and select ARM processor core based SOC with several features/peripherals based on requirements of embedded applications.
				CO2: Select ARM processor core peripherals based on requirements of embedded applications.
				CO3: Develop small applications by utilizing the ARM processor core and DSP processor based platform.
				CO4: Identify and characterize architecture of Programmable DSP Processors
				CO5: Develop small applications by utilizing the ARM processor core and DSP processor based platform.
3	I-I	PE	VLSI signal processing	**CO1:** Ability to modify the existing or new DSP architectures suitable for VLSI.
				CO2: Understand the concepts of folding and unfolding algorithms and applications.
				CO3: Develop Systolic Array Design Methodology and Systolic Design for Space Representations contain Delays
				CO4: Ability to implement fast convolution

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				algorithms.
				CO5: Low power design aspects of processors for signal processing and wireless applications.
4	I-I	PE	Programming Languages for Embedded Systems	**CO1:** Write an embedded C application of moderate complexity.
				CO2: Develop Object Oriented Programming and generic programming techniques.
				CO3: Develop and analyze algorithms in C++.
				CO4: Able to write the needs of Overloading and types of Inheritance
				CO5: Differentiate interpreted languages from compiled languages
5	I-I		Research methodology and IPR	**CO1:** Understand research problem formulation.
				CO2: Analyze research related information
				CO3: Follow research ethics
				CO4: it is needless to emphasis the need of information about Intellectual Property Right to be promoted among students in general & engineering in particular.
				CO5: Understand that IPR protection provides an incentive to inventors for further research work and investment in R & D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.
6	I-I	Lab 1	RTL Simulation and Synthesis with PLDs Lab	**CO1:** Identify, formulate, solve and implement problems in signal processing, communication Systems etc using RTL design tools.
				CO2: Use EDA tools like Cadence, Mentor Graphics and Xilinx.
7	I-I	Lab 2	Microcontrollers and Programmable Digital Signal Processors Lab	**CO1:** Install, configure and utilize tool sets for developing applications based on ARM processor core SOC and DSP processor.
				CO2: Develop prototype codes using commonly available on and off chip peripherals on the Cortex M3 and DSP development boards.
8	I-I	Aud 1	Value Education (Audit Course -	**CO1:** Knowledge of Self-development.
				CO2: Learn the importance of Human values.
				CO3: Developing the overall personality.
				CO1: Appreciate the trade-offs involved in analog

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9	I-II	PC	Analog and Digital CMOS VLSI Design	integrated circuit design.
				CO2: Understand and appreciate the importance of noise and distortion in analog circuits.
				CO3: Analyze complex engineering problems critically in the domain of analog IC design for conducting research.
				CO4: Demonstrate advanced knowledge in Static and dynamic characteristics of CMOS, Alternative CMOS Logics, Estimation of Delay and Power, Adders Design.
				CO5: Solve engineering problems for feasible and optimal solutions in the core area of digital ICs.
10	I-II	PC	Real Time Operating Systems	**CO1:** Illustrate real time programming concepts.
				CO2: Apply RTOS functions to implement embedded applications
				CO3: Analyze the issues in real time operating systems
				CO4: Understand fundamentals of design consideration for embedded applications
				CO5: To Understand Applications Control by RT Linux System
11	I-II	PE	Memory Architectures	**CO1:** Select architecture and design semiconductor memory circuits and subsystems.
				CO2: Identify various fault models, modes and mechanisms in semiconductor memories and their testing procedures.
				CO3: Identify various fault models in semiconductor memories
				CO4: Identify various fault models and their testing procedures.
				CO5: Know how the state-of-the-art memory chip design
12	I-II	PE	Communication Buses and Interfaces	**CO1:** Select a particular serial bus suitable for a particular application.
				CO2: Develop APIs for configuration, reading and writing data onto serial bus.
				CO3: Design and develop peripherals that can be interfaced to desired serial bus.
				CO4: Develop **USB** Transfer Types and

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				Descriptor types and contents
				CO5: Data streaming Serial Communication Protocol - Serial Front Panel Data Port(SFPDP)
13	I-II	Lab 1	Analog and Digital CMOS VLSI Design Lab	**CO1:** Analyze VI Characteristics NMOS and PMOS Devices.
				CO2: Analyze Voltage transfer characteristics of CMOS inverter.
				CO3: Demonstrate transient and ac analysis of CMOS inverter.
				CO4: Calculate small signal voltage gain of CS amplifier.
				CO5: Design the layout of a minimum size inverter.
14	I-II	Lab 2	Real Time Operating Systems Lab	**CO1:** Analyze basic concepts of operating system and their structures.
				CO2: Analyze various issues related to inter process communication like process scheduling, resource management and deadlocks.
				CO3: Interpret the issues and challenges of memory management.
				CO4: Synthesize the concept of I/O management, file system implementation and problems related to security and protection.
15	I-II	MP	Mini Project	**CO1:** Understand of contemporary / emerging technology for various processes and systems.
				CO2: Share knowledge effectively in oral and written form and formulate documents.
16	I-II	Aud 2	Stress Management by Yoga	**CO1:** Develop healthy mind in a healthy body thus improving social health also.
				CO2: Improve efficiency.
17	II-I	PE	Hardware Software co-design	**CO1:** About the Hardware-Software Code sign Methodology.
				CO2: How to select a target architecture and how a prototype is built and how emulation of a prototype is done.
				CO3: Brief view about compilation technologies and compiler development environment.
				CO4: About Design Specification and Verification
				CO5: Understand the importance of system level

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				specification languages and multi-language co-simulation.
18	II-I	OE	Operations Research	CO1: Students should able to apply the dynamic programming to solve problems of discreet and continuous variables.
				CO2: Students should able to apply the Formulation of a LPP
				CO3: Students should able to apply the concept of non-linear programming
				CO4: Students should able to carry out sensitivity analysis
				CO5: Student should able to model the real world problem and simulate it.
19	II-II	Dissertation	Project / Dissertation Phase- II	CO1: Ability to synthesize knowledge and skills previously gained and applied to an in-depth study and execution of new technical problem.
				CO2: Capable to select from different methodologies, methods and forms of analysis to produce a suitable research design, and justify their design.
				CO3: Ability to present the finding of their technical solution in a written report.
				CO4: Presenting the work in International / National conference or reputed journals

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