



KRISHNASAMY

College of ENGINEERING & TECHNOLOGY

Approved by AICTE & Affiliated to Anna University
Anand Nagar, Nellikuppam Main Road, S. Kumarapuram, Cuddalore - 607 109, Tamil Nadu.
☎ (04142) 285 601 - 601 🌐 www.kcet.in ✉ info@kcet.in

DEPARTMENT OF ECE

03.01.2024

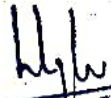
CIRCULAR

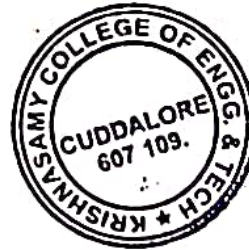
Ref.: KCET/ECE/VAC/CIRCULAR/2023-24/01.

The following Value Added Course will be conducted during the academic year 2023-2024. The course will be conducted from 11.01.2024 & 12.01.24, 18.01.24, 20.01.2024. Students are instructed to register their names in the course allotted to them.

Note: Students are instructed to attend the program without fail.

S.No.	Course Code	Name of the Course	Year	No. of Period	Course Coordinator
1	EC-VAC2301	RF SYSTEM DESIGN	IV	30	Er.M.DEVANANTHAN AP-ECE
2	EC-VAC2302	DIGITAL COMMUNICATION	III	30	Er.V.KOKILA,AP-ECE


8/1/24
Vice-Principal




02/01/24
HOD/ECE

Copy to:

Class Room

Class In charge

Department File


3/1/24
Principal



KRISHNASAMY

College of

ENGINEERING & TECHNOLOGY

Approved by AICTE & Affiliated to Anna University

Anand Nagar, Nellikuppam Main Road, S. Kumarapuram, Cuddalore - 607 109, Tamil Nadu.

☎ (04142) 285 601 - 604

🌐 www.kcet.in

✉ info@kcet.in

SYLLABUS

Subject Code/ Subject Name: EC-VAC2301 - RF SYSTEM DESIGN **Duration:** 30 Hours

OBJECTIVES:

The student should be made to:

- Be familiar with RF transceiver system design for wireless communications.
- Be exposed to design methods of receivers and transmitters used in communication systems

MODULE I CMOS PHYSICS, TRANSCIVER SPECIFICATIONS AND ARCHITECTURES 6

Introduction to MOSFET Physics, Noise: Thermal, shot, flicker, popcorn noise, Two port Noise theory, Noise Figure, THD, IP₂, IP₃, Sensitivity, SFDR, Phase noise - Specification distribution over a communication link, Homodyne Receiver, Heterodyne Receiver.

MODULE II IMPEDANCE MATCHING AND AMPLIFIERS 6

S-parameters with Smith chart, Passive IC components, Impedance matching networks, Common Gate, Common Source Amplifiers, OC Time constants in bandwidth estimation and enhancement, High frequency amplifier design, Power match and Noise match, Single ended and Differential LNAs, Terminated with Resistors and Source Degeneration LNAs.

MODULE III FEEDBACK SYSTEMS AND POWER AMPLIFIERS 6

Stability of feedback systems: Gain and phase margin, Root-locus techniques, Time and Frequency domain considerations, Compensation, General model – Class A, AB, B, C, D, E and F amplifiers, Power amplifier Linearization Techniques.

MODULE IV PLL AND FREQUENCY SYNTHESIZERS 6

Linearised Model, Noise properties, Phase detectors, Loop filters and Charge pumps, Integer-N frequency synthesizers, Direct Digital Frequency synthesizers.

MODULE V MIXERS AND OSCILLATORS 6

Mixer characteristics, Non-linear based mixers, Quadratic mixers, Multiplier based mixers, Single balanced and double balanced mixers, sub sampling mixers, Oscillators describing Functions, Colpitts oscillators, Resonators, Tuned Oscillators, Negative resistance oscillators, Phase noise.

COURSE OUTCOMES:

Upon Completion of the course, the students will be able to

- Design RF transceiver systems
- Use the systematic design methods of receivers and transmitters

TOTAL: 30 HOURS

(Signature)

HOD/ECE