



NPR

College of Engineering and Technology

(AN AUTONOMOUS INSTITUTION)

NSA Accredited (B.E., CSE, ECE, EEE & Mechanical Engg.) | Accredited by NAAC with 'A' Grade
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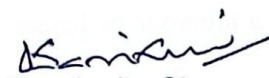
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

22.09.2025

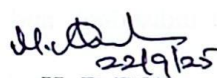
ACADEMIC YEAR 2024 – 2025

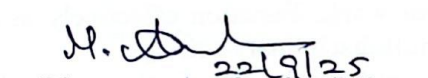
Programme Outcomes and Course Outcomes for all Programmes offered
by the institution – Regulation 2021

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Faculty In-Charge

(C. Kannika Parameshwari)


HoD-ECE


Director - Academics (i/c)
(Dr. M. Ameena Banu)


Principal



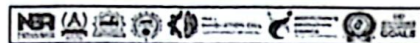
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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ACADEMIC YEAR 2024 – 2025

PROGRAM OUTCOMES

PROGRAM OUTCOMES(POs)

- 1. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- 2. Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- 3. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- 4. Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- 5. Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- 6. The Engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- 7. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- 8. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- 9. Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- 10. Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- 11. Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- 12. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

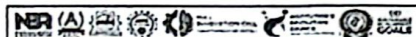


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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ACADEMIC YEAR 2024 – 2025

List of Courses with Course Code - Regulation 2021 (Batch: 2021 – 2025)

S/N.	COURSE CODE (NBA)	COURSE CODE (UNIVERSITY)	COURSE NAME OF THE COURSE
1st Semester			
1	C101	HS3152	Professional English - I
2	C102	MA3151	Matrices And Calculus
3	C103	PH3151	Engineering Physics
4	C104	CY3151	Engineering Chemistry
5	C105	GE3151	Problem Solving and Python Programming
6	C106	GE3152	தமிழர்மரபு /Heritage of Tamils
7	C107	GE3171	Problem Solving and Python Programming Laboratory
8	C108	BS3171	Physics and Chemistry Laboratory
9	C109	GE3172	English Laboratory
2nd Semester			
10	C110	HS3252	Professional English -II
11	C111	MA3251	Statistics and Numerical Methods
12	C112	PH3254	Physics for Electronics Engineering
13	C113	BE3254	Electrical and Instrumentation Engineering
14	C114	GE3251	Engineering Graphics
15	C115	EC3251	Circuit Analysis
16	C116	GE3252	தமிழரும் தொழில்நுட்பமும் /Tamils and Technology
17	C117	GE3271	Engineering Practices Laboratory
18	C118	EC3271	Circuit Analysis Laboratory
19	C119	GE3272	Communication Laboratory



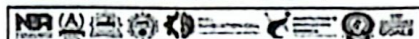
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3 rd Semester			
20	C201	MA3355	Random Processes and Linear Algebra
21	C202	CS3353	C Programming and Data Structures
22	C203	EC3351	Control Systems
23	C204	EC3352	Digital Systems Design
24	C205	EC3353	Electronic Devices and Circuits
25	C206	EC3354	Signals And Systems
26	C207	EC3361	Electronic Devices and Circuits Laboratory
27	C208	CS3362	C Programming and Data Structures Laboratory
28	C209	GE3361	Professional Development
4 th Semester			
29	C210	EC3401	Networks and Security
30	C211	EC3451	Linear Integrated Circuits
31	C212	EC3452	Electromagnetic Fields
32	C213	EC3491	Communication Systems
33	C214	EC3492	Digital Signal Processing
34	C215	GE3451	Environmental Sciences and Sustainability
35	C216	EC3461	Communication Systems Laboratory
36	C217	EC3462	Linear Integrated Circuits Laboratory
5 th Semester			
37	C301	EC3501	Wireless Communication
38	C302	EC3551	Transmission Lines and RF System
39	C303	EC3552	VLSI and Chip Design
40	C304	CEC331	4G/5G Communication Network
41	C305	CEC336	Avionics



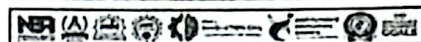
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42	C306	CEC352	Satellite Communication
43	C307	MX3081	Introduction to Gender and Women Studies
44	C308	MX3084	Disaster Risk Reduction and Management
45	C309	EC3561	VLSI Laboratory
6 th Semester			
46	C310	ET3491	Embedded System and IoT Design
47	C311	CS3491	Artificial Intelligence and Machine Learning
48	C312	CEC334	Analog IC Design
49	C313	CEC342	Mixed Signal IC Design Testing
50	C314	CEC345	Optical Communication
51	C315	OEE351	Renewable Energy Sources
52	C316	MX3089	Industrial Safety
7 th Semester			
53	C401	GE3791	Human values and Ethics
54	C402	GE3752	Total Quality Management
55	C403	AI3021	IT in Agriculture System
56	C404	OMR351	Mechatronics
57	C405	OBT357	Bio Technology in health care
58	C406	EC3711	Summer internship
8 th Semester			
59	C407	EC3811	Project Work / Internship



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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING Course Outcomes with Bloom's Taxonomy Regulation 2021 Semester – I

Course Code & Course Name : C101 & HS3152 - Professional English - I

Course Code	CO Statements	Knowledge Level
The students should be able to		
C101.1	Use appropriate words in a professional context	K3
C101.2	Gain understanding of basic grammatical structures and use them in right context.	K2
C101.3	Read and infer the denotative and connotative meanings of technical texts	K4
C101.4	Read and interpret information presented in tables, charts and other graphic forms	K4
C101.5	Write definitions, descriptions, narrations and essays on various topics	K3

Course Code & Course Name : C102 & MA3151 - Matrices And Calculus

Course Code	CO Statements	Knowledge Level
The students should be able to		
C102.1	Use the matrix algebra methods for solving practical problems	K3
C102.2	Apply differential calculus tools in solving various application problems	K3
C102.3	Able to use differential calculus ideas on several variable functions	K3



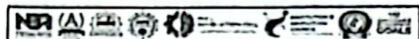
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C102.4	Apply different methods of integration in solving practical problems	K3
C102.5	Apply multiple integral ideas in solving areas, volumes and other practical problems	K3

Course Code & Course Name : C103 & PH3151 - Engineering Physics

Course Code	CO Statements	Knowledge Level
The students should be able to		
C103.1	Understand the importance of mechanics	K2
C103.2	Express the knowledge in electromagnetic waves	K2
C103.3	Demonstrate a strong foundational knowledge in oscillations, optics and lasers	K2
C103.4	Understand the importance of quantum physics	K2
C103.5	Comprehend and apply quantum mechanical principles towards the formation of energy bands	K3



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Course Code & Course Name : C104 & CY3151 - Engineering Chemistry

Course Code	CO Statements	Knowledge Level
The students should be able to		
C104.1	Infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water.	K4
C104.2	Identify and apply basic concepts of nanoscience and nanotechnology in designing the synthesis of nanomaterials for engineering and technology applications.	K3
C104.3	Apply the knowledge of phase rule and composites for material selection requirements.	K3
C104.4	Recommend suitable fuels for engineering processes and applications.	K5
C104.5	Recognize different forms of energy resources and apply them for suitable applications in energy sectors.	K3

Course Code & Course Name : C105 & GE3151- Problem Solving and Python Programming

Course Code	CO Statements	Knowledge Level
The students should be able to		
C105.1	Express algorithmic solutions to simple computational problems.	K2
C105.2	Compute and execute simple Python programs.	K3
C105.3	Implement simple Python programs using conditionals and loops for solving problems	K3
C105.4	Determine compound data using Python lists, tuples, dictionaries etc.	K3
C105.5	Read and write data from/to files in Python programs.	K1



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Course Code & Course Name : C106 & GE3152 - தமிழர் மரபு /Heritage of Tamils

Course Code	CO Statements	Knowledge Level
The students should be able to		
C106.1	Gain an understanding of the depth and classical heritage of the Tamil language	K2
C106.2	Explain the ancient Tamil people's expertise in sculpture, painting, and musical instruments	K2
C106.3	Delve into the folk traditions and martial arts practices of the Tamil community	K2
C106.4	Describe on the Tamil Thina concepts, trade networks, and the triumphs of the Chola dynasty	K2
C106.5	Recognize the contributions of Tamils to India's freedom struggle, the Self-Respect Movement, and the development of Siddha medicine	K2

Course Code & Course Name : C107 & GE3171- Problem Solving and Python Programming Laboratory

Course Code	CO Statements	Knowledge Level
The students should be able to		
C107.1	Simplify algorithmic solutions to simple computational problems	K4
C107.2	Model and execute simple Python programs	K4
C107.3	Implement programs in Python using conditionals and loops for solving problems..	K3
C107.4	Generate functions to decompose a Python program	K6
C107.5	Utilize Python packages for developing real-world software applications.	K3



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Course Code & Course Name : C108 & BS3171 - Physics and Chemistry Laboratory

Course Code	CO Statements	Knowledge Level
The students should be able to		
C108.1	Understand the functioning of various physics laboratory equipment	K2
C108.2	Use graphical models to analyze laboratory data	K4
C108.3	Use mathematical models as a medium for quantitative reasoning and describing physical reality	K3
C108.4	Access, process and analyze scientific information	K4
C108.5	Solve problems individually and collaboratively	K3

Course Code & Course Name : C108 & BS3171 - Physics and Chemistry Laboratory

Course Code	CO Statements	Knowledge Level
The students should be able to		
C108.1	Analyse the quality of water samples with respect to their acidity, alkalinity, hardness and DO.	K4
C108.2	Determine the amount of metal ions through volumetric and spectroscopic techniques	K3
C108.3	Analyse and determine the composition of alloys.	K4
C108.4	Learn simple method of synthesis of nanoparticles.	K3
C108.5	Quantitatively analyse the impurities in solution by electroanalytical techniques	K4



Course Code & Course Name : C109 & GE3172 - English Laboratory

Course Code	CO Statements	Knowledge Level
The students should be able to		
C109.1	Listen to and comprehend general as well as complex academic information	K2
C109.2	Listen to and understand different points of view in a discussion	K2
C109.3	Speak fluently and accurately in formal and informal communicative contexts	K3
C109.4	Describe products and processes and explain their uses and purposes clearly and accurately	K3
C109.5	Express their opinions effectively in both formal and informal discussions	K3

Semester - II

Course Code & Course Name : C110 & HS3252 - Professional English -II

Course Code	CO Statements	Knowledge Level
The students should be able to		
C110.1	Compare and contrast products and ideas in technical texts	K4
C110.2	Identify and report cause and effects in events, industrial processes through technical texts	K2
C110.3	Analyse problems in order to arrive at feasible solutions and communicate them in the written format	K4
C110.4	Present their ideas and opinions in a planned and logical manner	K5
C110.5	Draft effective resumes in the context of job search	K6



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Course Code & Course Name : C111 & MA3251 - Statistics And Numerical Methods

Course Code	CO Statements	Knowledge Level
The students should be able to		
C111.1	Apply the concept of testing of hypothesis for small and large samples in real life problems	K3
C111.2	Apply the basic concepts of classifications of design of experiments in the field of agriculture	K3
C111.3	Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems	K4
C111.4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations	K2
C111.5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications	K3

Course Code & Course Name : C112 & PH3254 - Physics for Electronics Engineering

Course Code	CO Statements	Knowledge Level
The students should be able to		
C112.1	Know basics of crystallography and its importance for varied materials properties	K1
C112.2	Gain knowledge on the electrical and magnetic properties of materials and their applications	K2
C112.3	Understand clearly of semiconductor physics and functioning of semiconductor devices	K2
C112.4	Understand the optical properties of materials and working principles of various optical devices	K2
C112.5	Appreciate the importance of nanotechnology and Nano devices	K2



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Course Code & Course Name : C113 & BE3254 - Electrical and Instrumentation Engineering

Course Code	CO Statements	Knowledge Level
The students should be able to		
C113.1	Illustrate the working principle of electrical machines	K2
C113.2	Analyze the output characterizes of electrical machines	K4
C113.3	Determine the appropriate electrical machines for various applications	K2
C113.4	Classify the types and operating principles of measuring instruments	K2
C113.5	Comprehend the basic power system structure and protection schemes	K3

Course Code & Course Name : C114 & GE3251- Engineering Graphics

Course Code	CO Statements	Knowledge Level
The students should be able to		
C114.1	Construct the conic curves, involutes and cycloid	K2
C114.2	Apply the principles of orthographic projections of points in all quadrants, lines and planes in first quadrant	K3
C114.3	Sketch the projections of simple solids like prisms, pyramids, cylinder and cone and freehand sketch of given figures	K3
C114.4	Practice the sectional views of solids like cube, prisms, pyramids, cylinders & cones and extend its development of surfaces	K3
C114.5	Sketch the perspective projection of simple solids, truncated prisms, pyramids, cone and cylinders and sketch the isometric projection of simple machine parts	K3



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Course Code & Course Name : C115 & EC3251 - Circuit Analysis

Course Code	CO Statements	Knowledge Level
The students should be able to		
C115.1	Apply the basic concepts of circuit analysis such as Kirchoff's laws, mesh current and node voltage method for analysis of DC and AC circuits	K3
C115.2	Examine suitable network theorems and analyze AC and DC circuits	K3
C115.3	Analyze steady state response of any R, L and C circuits	K4
C115.4	Determine the transient response for any RC, RL and RLC circuits and frequency response of parallel and series resonance circuits	K3
C115.5	Relate the coupled circuits and network topologies	K4

Course Code & Course Name : C116 & GE3252 - தமிழரும் தொழில்நுட்பமும் / Tamils and Technology

Course Code	CO Statements	Knowledge Level
The students should be able to		
C116.1	Gain an understanding of the depth and classical heritage of the Tamil language	K4
C116.2	Explain the ancient Tamil people's expertise in sculpture, painting, and musical instruments	K4
C116.3	Delve into the folk traditions and martial arts practices of the Tamil community	K4
C116.1	Describe on the Tamil Thina concepts, trade networks, and the triumphs of the Chola dynast	K4
C116.2	Recognize the contributions of Tamils to India's freedom struggle, the Self-Respect Movement, and the development of Siddha medicine.	K4



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Course Code & Course Name : C117 & GE3271 – Engineering Practices Laboratory

Course Code	CO Statements	Knowledge Level
The students should be able to		
C117.1	Design RL and RC circuits	K3
C117.2	Apply network theorems for electrical circuits	K3
C117.3	Demonstrate the transient analysis and resonance of the RLC circuits	K2

Course Code & Course Name : C118 & EC3271 - Circuit Analysis Laboratory

Course Code	CO Statements	Knowledge Level
The students should be able to		
C118.1	Design RL and RC circuits	K3
C118.2	Apply network theorems for electrical circuits	K3
C118.3	Demonstrate the transient analysis and resonance of the RLC circuits	K2

Course Code & Course Name : C119 & GE3272 - Communication Laboratory

Course Code	CO Statements	Knowledge Level
The students should be able to		
C119.1	Speak effectively in group discussions held in a formal/semi-formal contexts	K3
C119.2	Discuss, analyse and present concepts and problems from various perspectives to arrive at suitable solutions	K4
C119.3	Write emails, letters and effective job applications	K3



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C119.4	Write critical reports to convey data and information with clarity and precision.	K5
C119.5	Give appropriate instructions and recommendations for safe execution of tasks	K3

Semester -III

Course Code & Course Name : C201 & MA3355 - Random Processes And Linear Algebra

Course Code	CO Statements	Knowledge Level
The students should be able to		
C201.1	Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts	K2
C201.2	Demonstrate accurate and efficient use of advanced algebraic techniques	K3
C201.3	Apply the concept of random processes in engineering disciplines.	K3
C201.4	Understand the fundamental concepts of probability with a thorough knowledge of standard distributions that can describe certain real-life phenomenon	K2
C201.5	Understand the basic concepts of one and two dimensional random variables and apply them to model engineering problems	K3



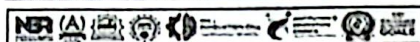
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Course Code & Course Name : C202 & CS3353 - C Programming And Data Structures

Course Code	CO Statements	Knowledge Level
The students should be able to		
C202.1	Develop C programs for any real world/technical application	K4
C202.2	Apply advanced features of C in solving problems	K3
C202.3	Implement functions for linear and non-linear data structure operations	K3
C202.4	Use appropriate linear/non-linear data structure operations for solving a given problem	K3
C202.5	Apply appropriate hash functions that result in a collision free scenario for data storage and retrieval	K3

Course Code & Course Name : C203 & EC3351- Control Systems

Course Code	CO Statements	Knowledge Level
The students should be able to		
C203.1	Identify and apply the various control system components and their representations	K3
C203.2	Attain the time response and steady state error of control systems	K3
C203.3	Analyze the stability of the system from its frequency response plots	K4
C203.4	Apply the concepts of Routh Hurwitz, Root locus and Nyquist stability criterions to analyze the stability of the systems	K4
C203.5	Analyze the system stability with state space models using state variables	K4



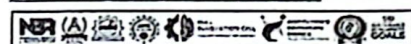
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Course Code & Course Name : C204 & EC3352 - Digital Systems Design

Course Code	CO Statements	Knowledge Level
The students should be able to		
C204.1	Simplification of logical expression using K-map and using Boolean algebra	K3
C204.2	Design various combinational digital circuits using logic gates	K3
C204.3	Design and analyze synchronous sequential circuits	K4
C204.4	Implement and design asynchronous sequential circuits	K3
C204.5	Examine programmable devices using logic gates	K3

Course Code & Course Name : C205 & EC3353 - Electronic Devices And Circuits

Course Code	CO Statements	Knowledge Level
The students should be able to		
C205.1	Explain the structure and working operation of basic electronic devices.	K2
C205.2	Examine and analyze amplifiers.	K3
C205.3	Analyze frequency response of BJT and MOSFET amplifiers	K4
C205.4	Implement feedback amplifiers and oscillator principles.	K3
C205.5	Describe power amplifiers and supply circuits	K2



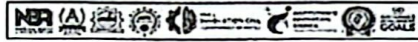
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Course Code & Course Name : C206 & EC3354 - Signals And Systems

Course Code	CO Statements	Knowledge Level
The students should be able to		
C206.1	Analyze the properties of signals and systems	K4
C206.2	Apply Fourier Series and Fourier transform in CT signals	K3
C206.3	Examine LTI CT systems in the time domain and frequency domain	K4
C206.4	Apply Z transform and DTFT in DT signals	K3
C206.5	Analyze LTI DT systems in the time domain and frequency domain	K4

Course Code & Course Name : C207 & EC3361- Electronic Devices and Circuits Laboratory

Course Code	CO Statements	Knowledge Level
The students should be able to		
C207.1	Examine the characteristics of PN Junction diode and Zener diode	K3
C207.2	Demonstrate the operation of rectifiers and filters	K2
C207.3	Examine the transistor characteristics of BJT	K3
C207.4	Analyze the frequency response and transistor characteristics of MOSFET	K4
C207.5	Measure and analyze various parameters of amplifiers	K4



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Course Code & Course Name : C208 & CS3362 - C Programming and Data Structures Laboratory

Course Code	CO Statements	Knowledge Level
The students should be able to		
C208.1	Use different constructs of C and develop applications	K3
C208.2	Write functions to implement linear and non-linear data structure operations	K6
C208.3	Use the appropriate linear / non-linear data structure operations for a given problem	K3
C208.4	Apply appropriate hash functions that result in a collision free scenario for data storage and Retrieval	K3
C208.5	Implement Sorting and searching algorithms for a given application	K3

Course Code & Course Name : C209 & GE3361 - Professional Development

Course Code	CO Statements	Knowledge Level
The students should be able to		
C209.1	Use MS Word to create quality documents, by structuring and organizing content for their day to day technical and academic requirements	K3
C209.2	Analyze themselves actively involved in group discussion activities. 2: Use MS EXCEL to perform data operations and analytics, record, retrieve data as per requirements and visualize data for ease of understanding	K4
C209.3	Use MS PowerPoint to create high quality academic presentations by including common tables, charts, graphs, interlinking other elements, and using media objects	K3



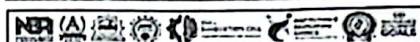
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Semester - IV

Course Code & Course Name : C210 & EC3401- Networks and Security

Course Code	CO Statements	Knowledge Level
The students should be able to		
C210.1	Analyze the concepts of network models, layers and functions	K3
C210.2	Apply and classify the routing protocols	K3
C210.3	Analyze the functions of the transport and application layer	K4
C210.4	Analyze and choose the network security mechanism	K4
C210.5	Apply the hardware security attacks and counter measures	K3

Course Code & Course Name : C211 & EC3451 Linear Integrated Circuits

Course Code	CO Statements	Knowledge Level
The students should be able to		
C211.1	Understand the construction and working of Op-amp and also its AC and DC characteristics	K2
C211.2	Design the circuits using op amp for linear and nonlinear applications	K3
C211.3	Apply the concepts of analog multiplier and PLL for various applications	K3
C211.4	Interpret the principle of conversion of ADC and DAC using op-amps	K2
C211.5	Design various waveform generators and other circuits using different	K3



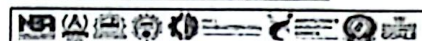
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Course Code & Course Name : C212 & EC3452- Electromagnetic Fields

Course Code	CO Statements	Knowledge Level
The students should be able to		
C212.1	Relate the fundamentals of vector, coordinate system to electromagnetic concepts	K4
C212.2	Analyze the characteristics of Electrostatic field .	K4
C212.3	Interpret the concepts of Electric field in material space and solve the boundary conditions	K2
C212.4	Explain the concepts and characteristics of Magneto Static field in material space and solve boundary conditions.	K2
C212.5	Determine the significance of time varying fields	K2

Course Code & Course Name : C213 & EC3491 Communication Systems

Course Code	CO Statements	Knowledge Level
The students should be able to		
C213.1	Understand the basic properties of signal & systems and the amplitude and angle modulation	K3
C213.2	Understand the basics in probability that are relevant in applications such as random signals, Sampling, Signal reconstruction in communication engineering	K3
C213.3	Apply the different digital techniques, coding schemes to encode and decode the signals without error	K4
C213.4	Analyze the digital modulation schemes to find the PSD, BER, and IQ representation	K4
C213.5	Analyze the various demodulation techniques	K4



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Course Code & Course Name : C214 & EC3492 Digital Signal Processing

Course Code	CO Statements	Knowledge Level
The students should be able to		
C214.1	Understand the fundamental concepts of DFT for the analysis of discrete time signals	K3
C214.2	Implement the digital Infinite Impulse response Filters and formulate various realizations	K3
C214.3	Describe the linear phase Finite Impulse Response filters using windowing and frequency sampling techniques	K3
C214.4	Examine the finite word length effects in digital signal processing	K3
C214.5	Apply the concepts of architecture, addressing modes and instruction sets of Digital Signal Processors	K3

Course Code & Course Name : C215 & GE3451 Environmental Sciences and Sustainability

Course Code	CO Statements	Knowledge Level
The students should be able to		
C215.1	Recognize and understand the functions of environment, ecosystems and biodiversity and their conservation.	K2
C215.2	Identify the causes, effects of environmental pollution and natural disasters and contribute to the preventive measures in the society	K3
C215.3	Identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations	K3

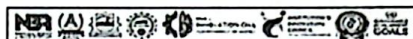


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C215.4	Recognize the different goals of sustainable development and apply them for suitable technological advancement and societal development	K3
C215.5	Demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization	K4

Course Code & Course Name : C216 & EC3461 Communication Systems Laboratory

Course Code	CO Statements	Knowledge Level
The students should be able to		
C216.1	Design AM, FM & Digital Modulators for specific applications	K4
C216.2	Compute the sampling frequency for digital modulation	K4
C216.3	Simulate & validate the various functional modules of Communication System	K3
C216.4	Demonstrate their knowledge in base band signaling schemes through implementation of digital modulation schemes	K2
C216.5	Apply various channel coding schemes & demonstrate their capabilities towards the improvement of the noise performance of Communication System	K3



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Course Code & Course Name : C217& EC3462 Linear Integrated Circuit Laboratory

Course Code	CO Statements	Knowledge Level
The students should be able to		
C217.1	Analyze various types of feedback amplifiers	K4
C217.2	Design and analyze amplifiers, oscillators, D-A converters and wave-shaping circuits using op-amp	K4
C217.3	Design and analyze filters using op-amp and performs an experiment on frequency response	K4
C217.4	Analyze the working of PLL and use PLL as frequency multiplier	K4
C217.5	Design and simulate oscillators, tuned amplifiers, wave- shaping circuits and multivibrators and power amplifiers using SPICE Tool	K4

Semester - V

Course Code & Course Name : C301 & EC3501 Wireless Communication

Course Code	CO Statements	Knowledge Level
The students should be able to		
C301.1	Understand The Concept And Design Of A Cellular System	K2
C301.2	Understand Mobile Radio Propagation And Various Digital Modulation Techniques	K2



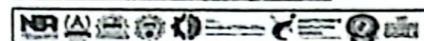
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C301.3	Understand The Concepts Of Multiple Access Techniques And Wireless Networks	K2
C301.4	Characterize a wireless channel and evolve the system design specifications	K2
C301.5	Design a cellular system based on resource availability and traffic demands	K3

Course Code & Course Name : C302 & EC3551 Transmission lines and RF Systems

Course Code	CO Statements	Knowledge Level
The students should be able to		
C302.1	Analyze the characteristics of transmission lines and its losses	K3
C302.2	Calculate the standing wave ratio and input impedance in high frequency transmission lines	K3
C302.3	Analyze impedance matching by stubs using Smith Charts	K4
C302.4	Analyze the characteristics of TE and TM waves	K3
C302.5	Design a RF transceiver system for wireless communication	K3



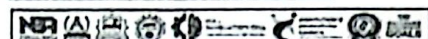
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Course Code & Course Name : C303 & EC3552 VLSI and Chip Design

Course Code	CO Statements	Knowledge Level
The students should be able to		
C303.1	Distinguish in-depth knowledge of MOS technology	K4
C303.2	Compute Combinational Logic Circuits and Design Principles	K3
C303.3	Design Sequential Logic Circuits and Clocking Strategies	K4
C303.4	Outline Memory architecture and building blocks	K2
C303.5	Implement the ASIC Design Process and Testing	K2

Course Code & Course Name : C304 & CEC331 4G/5G Communication Networks

Course Code	CO Statements	Knowledge Level
The students should be able to		
C304.1	Generate 5G- compliant waveforms and protocols	K5
C304.2	Design the modeling of 5G Synchronization signal blocks and bursts	K5
C304.3	Apply the Channel modeling in 5G networks	K3
C304.4	Perform the Multiband OFDM demodulation and 5G NR Downlink analysis	K5
C304.5	Analyse the perfect channel estimation.	K4



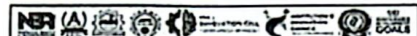
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Course Code & Course Name : C305 & CEC336 Avionics Systems

Course Code	CO Statements	Knowledge Level
The students should be able to		
C305.1	Explain the different of Avionics Systems and its need for civil and military aircrafts considering the reliability and safety aspects	K2
C305.2	Select a suitable architecture and data bus based on the requirements	K3
C305.3	Compare the different display technologies used in cockpit	K3
C305.4	Explain the principles of flight control systems and the importance of FMS	K2
C305.5	Explain the communication and navigation techniques used in aircrafts	K2

Course Code & Course Name : C306 & CEC352 Satellite communication

Course Code	CO Statements	Knowledge Level
The students should be able to		
C306.1	Understand the basics of satellite orbits	K2
C306.2	Distinguish the satellite segment and earth segment	K4
C306.3	Analyze the satellite link design	K4
C306.4	Understand the multiple access techniques and coding methods used in satellite networks	K2
C306.5	Understand the development of satellites for various applications	K2



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Course Code & Course Name: C307 & MX3081 Introduction to Women and Gender Studies		
Course Code	CO Statements	Knowledge Level
The students should be able to		
C307.1	Understand the concept of gender, sex and social construction	K2
C307.2	Explain about feminist theory	K2
C307.3	Understand the concept of rise of feminism	K2
C307.4	Understand about linguistic forms and gender	K2
C307.5	Understand the concept of gender and its representation	K2

Course Code & Course Name : C308 & MX3084 Disaster and Risk Reduction Management

Course Code	CO Statements	Knowledge Level
The students should be able to		
C308.1	Impart knowledge on the concepts of Disaster, Vulnerability and Disaster Risk reduction	K5
C308.2	Enhance understanding on Hazards, Vulnerability and Disaster Risk Assessment prevention and risk reduction	K5
C308.3	Develop disaster response skills by adopting relevant tools and technology	K5



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C308.4	Enhance awareness of institutional processes for Disaster response in the country	K5
C308.5	Develop rudimentary ability to respond to their surroundings with potential	K5

Course Code & Course Name : C309 & EC3561 VLSI Laboratory

Course Code	CO Statements	Knowledge Level
The students should be able to		
C309.1	Write HDL code for basic as well as advanced digital integrated circuit	K3
C309.2	Import the logic modules into FPGA Boards	K3
C309.3	Synthesize Place and Route the digital IPs	K4
C309.4	Design, Simulate and Extract the layouts of Digital & Analog IC Blocks using EDA	K4
C309.5	Test and Verification of IC design	K5



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Course Code & Course Name : C310 & ET3491 Embedded Systems & IoT Design

Course Code	CO Statements	Knowledge Level
The students should be able to		
C310.1	Explain the architecture and features of 8051	K2
C310.2	Design a model of an embedded system	K2
C310.3	List the concepts of real time operating systems	K1
C310.4	Illustrate the architecture and protocols of IoT	K2
C310.5	Design an IoT based system for any application	K2

Course Code & Course Name : C311 & CS3491 Artificial Intelligence & Machine Learning

Course Code	CO Statements	Knowledge Level
The students should be able to		
C311.1	Understand the basics of Intelligent agents and use appropriate search algorithms to solve the AI based problem	K2
C311.2	Learn the theoretical knowledge about principles of logic-based representation and techniques for reasoning under uncertainty	K1
C311.3	Understand the basics of Machine Learning and ability to understand the Supervised Learning models	K2
C311.4	Understand the Ensemble Models and Unsupervised Learning models	K2
C311.5	Describe the basic knowledge of Deep Learning Neural networks and Demonstrate the various models to solve the real time complex problems	K3



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Course Code & Course Name : C312 & CEC334 Analog IC Design

Course Code	CO Statements	Knowledge Level
The students should be able to		
C312.1	Construct the amplifiers to meet user specifications	K3
C312.2	Analyze the frequency and noise performance of amplifiers	K4
C312.3	Construct the feedback amplifiers and one stage op amps	K3
C312.4	Analyze the stability of op amp	K4
C312.5	Interpret the testing experience of logic circuits	K2

Course Code & Course Name : C313 & CEC342 Mixed Signal IC Design Testing

Course Code	CO Statements	Knowledge Level
The students should be able to		
C313.1	Learn the fundamentals of mixed signal circuits	K3
C313.2	Define the various measurement terminologies	K3
C313.3	Acquire knowledge of Analog to Digital Converters	K3
C313.4	Learn testing of Analog to Digital Converters	K3
C313.5	Comprehend the attributes of a clock signal	K2



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Course Code & Course Name : C314 & CEC345 Optical Communication

Course Code	CO Statements	Knowledge Level
The students should be able to		
C314.1	Realize basic elements in Optical Fibers, different modes and Configurations	K2
C314.2	Describe the transmission characteristics associated with dispersion and polarization techniques	K2
C314.3	Determine optical sources and detectors with their use in optical communication system	K3
C314.4	Construct Fiber optic receiver systems, measurements and techniques	K3
C314.5	Construct Optical communication systems and its networks	K3

Course Code & Course Name : C315 & OEE351 Renewable Energy Sources

Course Code	CO Statements	Knowledge Level
The students should be able to		
C315.1	Attained knowledge about various renewable energy technologies	K2
C315.2	Ability to understand and design a PV system	K3
C315.3	Understand the concept of various wind energy system	K3
C315.4	Gained knowledge about various possible hybrid energy systems	K4
C315.5	Attained knowledge about various application of renewable energy technologies	K2



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Course Code & Course Name : C316 & MX3089 Industrial Safety

Course Code	CO Statements	Knowledge Level
The students should be able to		
C316.1	Understand the basic concept of safety	K2
C316.2	Obtain knowledge of Statutory Regulations and standards	K2
C316.3	Know about the safety Activities of the Working Place	K2
C316.4	Analyze on the impact of Occupational Exposures and their Remedies	K4
C316.5	Obtain knowledge of Risk Assessment Techniques	K2

Semester - VII

Course Code & Course Name : C401 & GE3791 Human values and Ethics

Course Code	CO Statements	Knowledge Level
The students should be able to		
C401.1	Understand the importance of democratic values in the harmonious functioning of social life	K2
C401.2	Build secular values in both their personal and professional life	K3
C401.3	Build democratic and scientific value in both their personal and professional life	K3



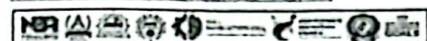
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C401.4	Identify rational solutions to social problems and behave in an ethical manner in society	K2
C401.5	Build the critical thinking and the pursuit of truth in modern society	K3

Course Code & Course Name : C402 & GE3752 Total Quality Management

Course Code	CO Statements	Knowledge Level
The students should be able to		
C402.1	Apply TQM concepts in a selected enterprise	K2
C402.2	Apply TQM principles in a selected enterprise	K3
C402.3	Understand Six Sigma and apply Traditional tools, New tools, Benchmarking and FMEA	K3
C402.4	Understand Taguchi's Quality Loss Function, Performance Measures and apply QFD, TPM, COQ and BPR	K4
C402.5	Apply QMS and EMS in any organization	K2



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Course Code & Course Name : C403 & AI3021 IT in Agriculture System

Course Code	CO Statements	Knowledge Level
The students should be able to		
C403.1	Understand the applications of IT in remote sensing applications such as Drones etc.	K2
C403.2	Get a clear understanding of how a greenhouse can be automated and its advantages	K3
C403.3	Apply IT principles and concepts for management of field operations	K3
C403.4	Understanding about weather models, their inputs and applications	K4
C403.5	Understanding of how IT can be used for e-governance in agriculture	K2

Course Code & Course Name : C404 & OMR351 Mechatronics

Course Code	CO Statements	Knowledge Level
The students should be able to		
C404.1	Select sensors to develop mechatronics systems	K2
C404.2	Explain the architecture and timing diagram of microprocessor, and also interpret and develop programs	K2
C404.3	Design appropriate interfacing circuits to connect I/O devices with microprocessor	K3
C404.4	Apply PLC as a controller in mechatronics system	K2
C404.5	Discuss various Actuators and Mechatronics system	K2



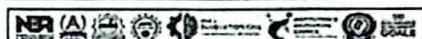
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Course Code & Course Name : C405 & Bio Technology in health care

Course Code	CO Statements	Knowledge Level
The students should be able to		
C405.1	Describe higher standard of knowledge on healthcare system of public health	K1
C405.2	Demonstrate the types of communication and communication used in health care technology	K1
C405.3	Describe knowledge on development of vaccinology	K1
C405.4	Classify hospitals, different units and their functions in hospital	K2
C405.5	Classify different imaging techniques and suggest suitable imaging methodology for specific applications	K2



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Recognized by UGC under 177 | ISO 9001:2015 Certified | Approved by All India Council For Technical Education, New Delhi
Affiliated to Anna University, Chennai

Netham, Dindigul (Dist.) - 624 401, Tamil Nadu.



Course Code & Course Name : C406 & EC3711 Summer internship

Course Code	CO Statements	Knowledge Level
The students should be able to		
C406.1	Apply system-level design methodologies along with verification and validation techniques to develop reliable engineering solutions	K3
C406.2	Demonstrate practical knowledge of manufacturing, production, and laboratory/research processes relevant to industrial and research environments	K3
C406.3	Identify, analyze, and solve industrial/research problems using appropriate engineering tools, methods, and innovative approaches	K3
C406.4	Document technical processes effectively, including system specifications, design methodologies, process parameters, testing protocols, and results	K3
C406.5	Communicate technical findings clearly and professionally through well-structured reports and oral presentations	K3



NPR

College of Engineering and Technology

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WBA Accredited (B.E., CSE, ECE & Mechanical Engg.) | Accredited by NAAC with 'B' Grade
Recognized by MCA under 2 (7) | ISO 9001:2015 Certified | Approved by All India Council for Technical Education, New Delhi
Affiliated to Anna University, Chennai

Natham, Dindigul (Dist.) - 624 401, Tamil Nadu.



Semester - VIII

Course Code & Course Name : C407 & EC 3811 Project Work

Course Code	CO Statements	Knowledge Level
The students should be able to		
C407.1	Conduct a literature survey in the selected domain to identify requirements for the real-world problems and propose a methodology	K3
C407.2	Model the problem at hand and experiment with Hardware/Software skill sets to suit the requirements	K3
C407.3	Build and demonstrate the project effectively as a team with the attitudes of professional Engineers	K3
C407.4	Evaluate the challenges and risks involved in the execution of the project and take appropriate actions to circumvent them	K3
C407.5	Communicate the results of an engineering project by means of an oral presentation, written reports and practical demonstration of the project outcomes	K3