Indra Ganesan
COLLEGE OF ENGINEERING

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
Accredited by NAAC with 'B+' Grade, 2(f) & 12B Status Institution by UGC

IG Valley, Madurai Main Road, Manikandam, Tiruchirappalli - 620012

NAAC DOCUMENTS

QUALITY INDICATOR FRAME WORK

CRITERION – 2

TEACHING-LEARNING AND EVALUATION

SUBMITTED BY

IQAC

INTERNAL QUALITY ASSURANCE CELL
INDRA GANESAN COLLEGE OF ENGINEERING

Criteria 2	Teaching-Learning and Evaluation	350

Key Indicator-2.6 Student Performances and Learning Outcome (90)

2.6.1 Programme Outcomes (POs) and Course Outcomes (COs) for all programmes offered by the institution are stated and displayed on website

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING...R2017

INDRA GANESAN COLLEGE OF ENGINEERING

IG Valley, Manikandam, Tiruchirappalli, Tamil Nadu – 620 012, India
(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai-25)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

REGULATION -2017

COURSE OUTCOMES

SEM –III
MA8352- Linear Algebra and Partial Differential Equations

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C201.1	Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.	1,2,3,4,5,11,12	-
C201.2	Demonstrate accurate and efficient use of advanced algebraic techniques.	1,2,3,4,5,11,12	-
C201.3	Demonstrate their mastery by solving non - trivial problems related to the concepts.	1,2,3,4,5,11,12	-
C201.4	Solve various types of partial differential equations.	1,2,3,4,5,11,12	-
C201.5	Solve engineering problems using Fourier series	1,2,3,4,5,11,12	-
C201.6	Proving simple theorems about the statements proven by the text.	1,2,3,4,5,11,12	

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
C201.1	3	3	2	2	2	-	-	-	-	-	2	1	-	-	-
C201.2	3	3	2	2	2	-	-	-	-	-	2	1	-	-	-
C201.3	3	3	2	2	2	-	-	-	-	-	2	1	-	-	-
C201.4	3	3	0	2	2	-	-	-	-	-	2	1	-	-	-
C201.5	3	3	0	2	2	-	-	-	-	-	2	1	-	-	-
C201.6	3	3	0	2	2	-	-	-	-	-	2	1	-	-	-
C201	3	3	2	2	2	-	-	-	-	-	2	1	-		-

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-12

C202- EC8393 Fundamentals of DataStructures In C

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C202.1	Implement linear and non-linear data structure operations using C	1,2,3,4,6,9,10,11,12	1,3
C202.2	Suggest appropriate linear data structure for any given data set.	1,2,3,4,6,9,10,11,12	1,3
C202.3	Suggest appropriate non-linear data structure for any given data set.	1,2,3,4,6,9,10,11,12	1,3
C202.4	Apply hashing concepts for a given problem	1,2,3,4,6,9,10,11,12	1,3
C202.5	Modify or suggest new data structure for an application	1,2,3,4,6,9,10,11,12	1,3
C202.6	Appropriately choose the sorting algorithm for an application	1,2,3,4,6,9,10,11,12	1,3

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
C202.1	3	3	2	2	-	1	-	-	1	1	1	1	2	-	2
C202.2	3	3	2	2	-	1	-	-	1	1	1	1	2	-	2
C202.3	3	3	2	2	-	1	-	-	1	1	1	1	2	-	2
C202.4	3	3	2	2	-	1	-	-	1	1	1	1	2	-	2
C202.5	3	3	2	2	-	1	-	-	1	1	1	1	2	-	2
C202.6	3	3	2	2	-	1	-	-	1	1	1	1	2	-	2
C202	3	3	2	2	-	1	-	-	1	1	1	1	2	-	2

C203- EC8351 Electronic Circuits-I

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C203.1	Acquire knowledge of Working principles, characteristics and applications of BJT	1,2,3,4,5,6,12	1,2,3
C203.2	Acquire knowledge of Working principles, characteristics and application FET	1,2,3,4,5,6,12	1,2,3
C203.3	Frequency response characteristics of BJT and FET amplifiers s	1,2,3,4,5,6,12	1,2,3
C203.4	Analyze the performance of small signal BJT and FET amplifiers - single stage amplifiers	1,2,3,4,5,6,12	1,2,3
C203.5	Analyze the performance of small signal BJT and FET amplifiers multi stage amplifiers	1,2,3,4,5,6,12	1,2,3
C203.6	Apply the knowledge gained in the design of Electronic circuit	1,2,3,4,5,6,12	1,2,3

Mapping of COs, PSOs with POs

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
C203.1	3	3	3	3	2	1	-	-	-	-	-	1	2	1	1
C203.2	3	2	2	3	2	2	-	-	-	-	-	1	2	1	1
C203.3	3	3	3	2	1	2	-	-	-	-	-	1	2	1	1
C203.4	3	3	3	3	2	2	-	-	-	-	-	1	2	1	1
C203.5	3	2	2	2	2	1	-	-	-	-	-	1	2	1	1
C203.6	3	3	3	3	2	2	-	-	-	-	-	1	2	1	1
C203	3	3	3	3	2	2	-	-	-	-	-	1	2	1	1

C204- EC8352 Signals and Systems

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C204.1	To be able to determine if a given system is linear/causal/stable	1,2,3,4,5,6,12	1,2,3
C204.2	Capable of determining the frequency components present in a deterministic signal	1,2,3,4,5,6,12	1,2,3
C204.3	Capable of characterizing LTI systems in the time domain	1,2,3,4,5,6,12	1,2,3
C204.4	Capable of characterizing LTI systems in the frequency domain	1,2,3,4,5,6,12	1,2,3
C204.5	Compute the output of an LTI system in the time domains	1,2,3,4,5,6,12	1,2,3
C204.6	Compute the output of an LTI system in the frequency domains	1,2,3,4,5,6,12	1,2,3

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
C204.1	3	3	3	3	3	2	-	-	-	-	-	2	2	3	1
C204.2	3	3	3	3	3	2	-	-	-	-	-	2	2	3	1
C204.3	3	3	3	3	3	2	-	-	-	-	-	2	2	3	1
C204.4	3	3	3	3	3	2	-	-	-	-	-	2	2	3	1
C204.5	3	3	3	3	3	2	-	-	-	-	-	2	2	3	1
C204.6	3	3	3	3	3	2	-	-	-	-	-	2	2	3	1
C202	3	3	3	3	3	2	-	-	-	-	-	2	2	3	1

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

C205- EC8392 Digital Electronics

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C205.1	Use digital electronics in the present contemporary world	1,2,3,4,5,6,11,12	1,2,3
C205.2	Design various combinational digital circuits using logic gates	1,2,3,4,5,6,11,12	1,2,3
C205.3	Do the analysis and design procedures for synchronous and asynchronous sequentialcircuits	1,2,3,4,5,6,11,12	1,2,3
C205.4	Use the semiconductor memories and related technology	1,2,3,4,5,6,11,12	1,2,3
C205.5	Use electronic circuits involved in the design of logic gates	1,2,3,4,5,6,11,12	1,2,3
C205.6	The ability to identify and prevent various hazards and timing problems in a digital design	1,2,3,4,5,6,11,12	1,2,3

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
C205.1	3	3	3	2	-	2	-	-	-	-	2	3	2	3	2
C205.2	3	3	3	2	-	2	-	-	-	-	2	1	2	3	2
C205.3	3	3	3	2	-	2	-	-	-	-	2	2	2	3	2
C205.4	3	3	3	2	-	2	-	-	-	-	2	2	2	3	2
C205.5	3	3	3	2	-	2	-	-	-	-	2	2	2	3	2
C205.6	3	3	3	2	-	2	-	-	-	-	2	2	2	3	2
C205	3	3	3	2	-	2	-	-	-	-	2	2	2	3	2

C206- EC8391 Control Systems Engineering

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C206.1	Identify the various control system components and their representations.	1,2,3,4,5,6,11,12	1,2,3
C206.2	Analyze the various time domain parameters.	1,2,3,4,5,6,11,12	1,2,3
C206.3	Analysis the various frequency response plots and its system.	1,2,3,4,5,6,11,12	1,2,3

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

C206.4	Apply the concepts of various system stability criterions.	1,2,3,4,5,6,11,12	1,2,3
C206.5	Design various transfer functions of digital control system using state variable models.	1,2,3,4,5,6,11,12	1,2,3
C206.6	Analyse the concepts of sampled data control system.	1,2,3,4,5,6,11,12	1,2,3

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
C206.1	3	3	3	2	2	3	-	-	-	-	2	2	3	3	3
C206.2	3	3	3	3	2	3	-	-	-	-	2	2	3	3	3
C206.3	3	3	3	3	2	3	-	-	-	-	2	2	3	3	3
C206.4	3	3	3	2	2	3	-	-	-	-	2	2	3	3	3
C206.5	3	3	3	2	2	3	-	-	-	-	2	2	3	3	3
C206.6	3	3	3	3	2	3	-	-	-	-	2	2	3	3	3
C206	3	3	3	3	2	3	-	-	-	-	2	2	3	3	3

C207- EC8381 Fundamentals of Data Structures in C Laboratory

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C207.1	Write basic and advanced programs in C	1,2,3,4,5,6,7,9,10,11,12	1,2,3
C207.2	Implement functions and recursive functions in C	1,2,3,4,5,6,7,9,10,11,12	1,2,3
C207.3	Implement data structures using C	1,2,3,4,5,6,7,9,10,11,12	1,2,3
C207.4	Choose appropriate sorting algorithm for an application and implement it in a modularizedway	1,2,3,4,5,6,7,9,10,11,12	1,2,3
C207.5	Ability to implement searching algorithms using relevant data structures	1,2,3,4,5,6,7,9,10,11,12	1,2,3
C207.6	Ability to implement linear and non-linear data structure operations using C programs	1,2,3,4,5,6,7,9,10,11,12	1,2,3

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
C207.	2	3	1	2	2	1	1	-	1	1	1	1	2	2	3

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

1														
C207.2	2	3	1	2	2	1	1	-	1	1	1	1	2	2	3
C207.3	2	3	1	2	2	1	1	-	1	1	1	1	2	1	3
C207.4	2	3	1	2	2	1	1	-	1	1	1	1	2	3	3
C207.5	2	3	1	2	2	1	1	-	1	1	1	1	2	2	3
C207.6	2	3	1	2	2	1	1	-	1	1	1	1	2	2	3
C207	2	3	1	2	2	1	1	-	1	1	1	1	2	2	3

C208- EC8361 Analog and Digital Circuits Laboratory

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C208.1	Design and Test rectifiers, filters and regulated power supplies.	1,2,3,4,5,6,7,9,10,11,12	1,2,3
C208.2	Design and Test BJT/JFET amplifiers	1,2,3,4,5,6,7,9,10,11,12	1,2,3
C208.3	Differentiate cascode and cascade amplifiers.	1,2,3,4,5,6,7,9,10,11,12	1,2,3
C208.4	Analyze the limitation in bandwidth of single stage and multi stage amplifier	1,2,3,4,5,6,7,9,10,11,12	1,2,3
C208.5	Measure CMRR in differential amplifier	1,2,3,4,5,6,7,9,10,11,12	1,2,3
C208.6	Simulate and analyze amplifier circuits using PSpice.	1,2,3,4,5,6,7,9,10,11,12	1,2,3

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
C208.1	2	2	2	2	2	1	1	-	1	1	1	1	2	2	2
C208.2	2	2	2	2	2	1	1	-	1	1	1	1	2	2	2
C208.3	2	2	2	2	2	1	1	-	1	1	1	1	2	2	2
C208.4	2	2	2	2	2	1	1	-	1	1	1	1	2	2	2
C208.5	2	2	2	2	2	1	1	-	1	1	1	1	2	2	2
C208.6	2	2	2	2	2	1	1	-	1	1	1	1	2	2	2

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

| C208 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | - | 1 | 1 | 1 | 1 | 2 | 2 | 2 |

C209- HS8381 Interpersonal Skills/Listening &Speaking

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C209.1	Listen and respond appropriately.	1,2,3,4,5,6,7,9,10,11,12	1,2,3
C209.2	Participate in group discussions	1,2,3,4,5,6,7,9,10,11,12	1,2,3
C209.3	Make effective presentations	1,2,3,4,5,6,7,9,10,11,12	1,2,3
C209.4	Participate confidently and appropriately in conversations both formal and informal	1,2,3,4,5,6,7,9,10,11,12	1,2,3
C209.5	Ability to produce solutions in order to save time in interpersonal communication	1,2,3,4,5,6,7,9,10,11,12	1,2,3
C209.6	Use of listening concept in interpersonal communication	1,2,3,4,5,6,7,9,10,11,12	1,2,3

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
C209.1	2	2	2	2	2	2	2	-	1	1	1	1	2	2	3
C209.2	2	2	2	2	2	2	2	-	1	1	1	1	2	2	3
C209.3	2	2	2	2	2	2	2	-	1	1	1	1	2	2	3
C209.4	2	2	2	2	2	2	2	-	1	1	1	1	2	2	3
C209.5	2	2	2	2	2	2	2	-	1	1	1	1	2	2	3
C209.6	2	2	2	2	2	2	2	-	1	1	1	1	2	2	3
C209	2	2	2	2	2	2	2	-	1	1	1	1	2	2	3

IV - Semester
C210- MA8451 Probability and Random Processes

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C210.1	The fundamental knowledge of the concepts of probability and have knowledgeof standard distributions which can describe real life phenomenon.	1,2,12	1,2,3

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

		POs	PSOs
C210.2	The basic concepts of one and two dimensional random variables and apply inengineering applications	1,2,12	1,2,3
C210.3	Apply the concept random processes in engineering disciplines	1,2,12	1,2,3
C210.4	Apply the concept of correlation and spectral densities.	1,2,12	1,2,3
C210.5	The students will have an exposure of various distribution functions and help in acquiring skills in handling situations involving more than one variable. Able to analyze the response of random inputs to linear time invariant systems.	1,2,12	1,2,3
C210.6	Gain knowledge about spectrum estimation and spectral density function	1,2,12	1,2,3

Mapping of COs, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C210.1	3	3	-	-	-	-	-	-	-	-	-	1	3	2	1
C210.2	3	3	-	-	-	-	-	-	-	-	-	1	3	2	1
C210.3	3	3	-	-	-	-	-	-	-	-	-	1	3	2	1
C210.4	3	3	-	-	-	-	-	-	-	-	-	1	3	2	1
C210.5	3	3	-	-	-	-	-	-	-	-	-	1	3	2	1
C210.6	3	3	-	-	-	-	-	-	-	-	-	1	3	2	1
C210	3	3	-	-	-	-	-	-	-	-	-	1	3	2	1

C211- EC8452 Electronic Circuits II

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C211.1	Analyze different types of amplifier, oscillator and multivibrator circuits	1,2,3,4,5,12	1,2
C211.2	Design BJT amplifier and oscillator circuits	1,2,3,4,5,12	1,2
C211.3	Analyze transistorized amplifier and oscillator circuits	1,2,3,4,5,12	1,2
C211.4	Design and analyze feedback amplifiers	1,2,3,4,5,12	1,2
C211.5	Design LC and RC oscillators, tuned amplifiers.	1,2,3,4,5,12	1,2
C211.6	Design wave shaping circuits, multivibrators, power amplifier and DC convertors.	1,2,3,4,5,12	1,2

Mapping of COs, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C211.1	3	2	2	2	1	-	-	-	-	-	-	1	1	1	-

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

C211.2	3	2	2	2	1	-	-	-	-	-	-	1	1	1	-
C211.3	3	2	2	2	1	-	-	-	-	-	-	1	1	1	-
C211.4	3	2	2	2	1	-	-	-	-	-	-	1	1	1	-
C211.5	3	2	2	2	1	-	-	-	-	-	-	1	1	1	-
C211.6	3	2	2	2	1	-	-	-	-	-	-	1	1	1	-
C211	3	2	2	2	1	-	-	-	-	-	-	1	1	1	-

C212- EC8491 Communication Theory

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C212.1	Design AM communication systems	1,2,3,5,8,11,12	2,3
C212.2	Design Angle modulated communication systems	1,2,3,5,8,11,12	2,3
C212.3	Apply the concepts of Random Process to the design of Communication systems	1,2,3,5,8,11,12	2,3
C212.4	Analyze the noise performance of AM systems	1,2,3,5,8,11,12	2,3
C212.5	Analyze the noise performance of FM systems	1,2,3,5,8,11,12	2,3
C212.6	Gain knowledge in sampling and quantization	1,2,3,5,8,11,12	2,3

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
C212.1	3	3	3	-	1	-	-	2	-	-	2	2	-	2	3
C212.2	3	3	3	-	3	-	-	2	-	-	2	2	-	2	3
C212.3	3	3	3	-	3	-	-	2	-	-	2	2	-	2	3
C212.4	3	3	3	-	1	-	-	2	-	-	2	2	-	2	3
C212.5	3	3	3	-	1	-	-	2	-	-	2	2	-	2	3
C212.6	3	3	3	-	3	-	-	2	-	-	2	2	-	2	3
C212	3	3	3	-	2	-	-	2	-	-	2	2	-	2	3

C213- EC8451 Electromagnetic Fields

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C213.1	Learn fundamental electromagnetic laws and concepts	1,2,3,5,11,12	2,3

		POs	PSOs
C213.2	Write Maxwell's equations in integral, differential and phasor forms and explain their physical meaning	1,2,3,5,11,12	2,3
C213.3	Explain electromagnetic wave propagation in lossy media	1,2,3,5,11,12	2,3
C213.4	Explain electromagnetic wave propagation in lossless media	1,2,3,5,11,12	2,3
C213.5	Solve simple problems requiring estimation of electric and magnetic field quantities based on these concepts and law	1,2,3,5,11,12	2,3
C213.6	solve problems based on the above concepts	1,2,3,5,11,12	2,3

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
C213.1	3	3	3	-	2	-	-	-	-	-	2	3	-	3	2
C213.2	3	3	3	-	2	-	-	-	-	-	2	3	-	3	2
C213.3	3	3	3	-	2	-	-	-	-	-	2	3	-	3	2
C213.4	3	3	3	-	2	-	-	-	-	-	2	3	-	3	2
C213.5	3	3	3	-	2	-	-	-	-	-	2	3	-	3	2
C213.6	3	3	3	-	2	-	-	-	-	-	2	3	-	3	2
C213	3	3	3	-	2	-	-	-	-	-	2	3	-	3	2

C214- EC8453 Linear Integrated Circuits

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C214.1	Explain the basic building blocks of linear integrated circuits	1,2,3,4,5,7,10,11,12	1,2,3
C214.2	Design linear and non linear applications of OP – AMPS	1,2,3,4,5,7,10,11,12	1,2,3
C214.3	Design applications using analog multiplier and PLL	1,2,3,4,5,7,10,11,12	1,2,3
C214.4	Design ADC and DAC using OP – AMPS	1,2,3,4,5,7,10,11,12	1,2,3
C214.5	Generate waveforms using OP – AMP Circuits	1,2,3,4,5,7,10,11,12	1,2,3
C214.6	Analyze special function ICs	1,2,3,4,5,7,10,11,12	1,2,3

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

C214.1	3	2	2	1	1	-	-	-	-	-	1	1	3	2	1
C214.2	3	2	2	2	1	-	1	-	-	1	2	1	3	2	1
C214.3	3	2	2	1	1	-	1	-	-	1	2	1	3	2	1
C214.4	3	2	2	1	2	-	2	-	-	1	1	1	3	2	1
C214.5	3	2	2	1	1	-	2	-	-	1	1	1	3	2	1
C214.6	3	2	2	-	1	-	2	-	-	1	1	1	3	2	1
C214	3	2	2	1	1	-	2	-	-	1	1	1	3	2	1

C215- GE8291 Environmental Science and Engineering

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C215.1	Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection.	1,2,3,4,5,6,7,8,9,10,11,12	-
C215.2	Public awareness of environmental is at infant stage	1,2,3,4,5,6,7,8,9,10,11,12	-
C215.3	Ignorance and incomplete knowledge has lead to misconceptions	1,2,3,4,5,6,7,8,9,10,11,12	-
C215.4	Development and improvement in std. of living has lead to serious environmental disasters	1,2,3,4,5,6,7,8,9,10,11,12	-
C215.5	study the integrated themes and biodiversity, natural resources, pollution control and waste management.	1,2,3,4,5,6,7,8,9,10,11,12	-
C215.6	Study the dynamic processes and understand the features of the earth"s interior and surface	1,2,3,4,5,6,7,8,9,10,11,12	-

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
C215.1	2	2	-	-	-	1	1	-	1	1	-	2	-	-	-
C215.2	2	2	2	-	2	2	1	1	2	2	-	1	-	-	-
C215.3	2	2	2	2	-	1	1	-	1	1	-	1	-	-	-
C215.4	2	2	2	2	1	1	1	-	1	1	1	1	-	-	-
C215.5	2	2	2	-	-	1	1	-	-	1	1	1	-	-	-
C215.6	2	2	2	2	1	1	1	1	1	1	1	1	-	-	-

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012

6															
C215	2	2	2	2	1	1	1	1	1	1	1	1	-	-	-

C216- EC8461 Circuits Design and Simulation Laboratory

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C216.1	Analyze various types of feedback amplifiers.	1,2,3,4,5	1,2,3
C216.2	Design oscillators, tuned amplifiers, wave-shaping circuits and multivibrators.	1,2,3,4,5	1,2,3
C216.3	Design tuned amplifiers, wave-shaping circuits and multivibrators.	1,2,3,4,5	1,2,3
C216.4	Design wave-shaping circuits.	1,2,3,4,5	1,2,3
C216.5	Design multivibrators.	1,2,3,4,5	1,2,3
C216.6	Design and simulate feedback amplifiers, oscillators, tuned amplifiers, wave-shaping circuits and multivibrators using SPICE Tool.	1,2,3,4,5	1,2,3

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
C216.1	3	2	2	1	1	-	-	-	-	-	-	-	2	1	1
C216.2	3	2	2	1	1	-	-	-	-	-	-	-	2	1	1
C216.3	3	2	2	1	1	-	-	-	-	-	-	-	2	1	1
C216.4	3	2	2	1	1	-	-	-	-	-	-	-	2	1	1
C216.5	3	2	2	1	1	-	-	-	-	-	-	-	2	1	1
C216.6	3	2	2	1	2	-	-	-	-	-	-	-	2	1	1
C216	3	2	2	1	1	-	-	-	-	-	-	-	2	1	1

C217- EC8462 Linear Integrated Circuits Laboratory

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C217.1	Design amplifiers, oscillators, D-A converters using operational amplifiers.	1,2,3,4,5,6,8,12	2,3
C217.2	Design filters using op-amp and performs an experiment on frequency response	1,2,3,4,5,6,8,12	2,3

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

		PO												
C217.3	Analyze the working of PLL and describe its application as a frequency multiplier	1,2,3,4,5,6,8,12												2,3
C217.4	Design DC power supply using ICs.	1,2,3,4,5,6,8,12												2,3
C217.5	Analyze the performance of filters, multivibrators, A/D converter and analog multiplier using SPICE. LAB REQUIREMENT FOR A BATCH	1,2,3,4,5,6,8,12												2,3
C217.6	Acquire the basic knowledge of special function IC.	1,2,3,4,5,6,8,12												2,3

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
C217.1	3	-	-	-	-	-	-	-	-	-	-	1	-	2	1
C217.2	3	2	2	2	-	-	-	1	-	-	-	1	-	2	1
C217.3	3	2	2	2	-	2	-	1	-	-	-	1	-	2	1
C217.4	3	2	2	2	-	2	-	1	-	-	-	1	-	2	1
C217.5	3	2	2	2	2	2	-	1	-	-	-	1	-	2	1
C217.6	3	2	-	2	2	-	-	1	-	-	-	1	-	2	1
C217	3	2	2	2	2	2	-	1	-	-	-	1	-	2	1

V- Semester

C301- EC8501 Digital Communication

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C301.1	study the limits set by Information Theory	1,2,3,5,12	1,2,3
C301.2	Design PCM systems	1,2,3,5,12	1,2,3
C301.3	Design and implement base band transmission schemes	1,2,3,5,12	1,2,3
C301.4	Design and implement band pass signaling schemes	1,2,3,5,12	1,2,3
C301.5	Analyze the spectral characteristics of band pass signaling schemes and their noise performance	1,2,3,5,12	1,2,3
C301.6	Design error control coding schemes	1,2,3,5,12	1,2,3

Mapping of COs, PSOs with POs

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
C301.1	3	2	-	-	-	-	-	-	-	-	-	-	2	3	1
C301.2	3	2	1	-	1	-	-	-	-	-	-	1	2	3	1
C301.3	3	2	1	-	1	-	-	-	-	-	-	1	2	3	1
C301.4	3	2	1	-	1	-	-	-	-	-	-	1	2	3	1
C301.5	3	2	1	-	1	-	-	-	-	-	-	1	2	3	1
C301.6	3	2	1	-	1	-	-	-	-	-	-	1	2	3	1
C301	3	2	1	-	1	-	-	-	-	-	-	1	2	3	1

C302- EC8553 Discrete-Time Signal Processing

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C302.1	Apply DFT for the analysis of digital signals and systems	1,2,3,4,5,6,7,12	1,2,3
C302.2	Design IIR filters	1,2,3,4,5,6,7,12	1,2,3
C302.3	Design FIR filters	1,2,3,4,5,6,7,12	1,2,3
C302.4	Characterize the effects of finite precision representation on digital filters	1,2,3,4,5,6,7,12	1,2,3
C302.5	Design multirate filters	1,2,3,4,5,6,7,12	1,2,3
C302.6	Apply adaptive filters appropriately in communication systems	1,2,3,4,5,6,7,12	1,2,3

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
C302.1	3	3	2	3	2	2	3	-	-	-	-	1	3	1	1
C302.2	3	3	3	2	-	2	3	-	-	-	-	-	-	1	1
C302.3	3	3	3	3	-	2	3	-	-	-	-	2	3	-	1
C302.4	3	3	3	3	-	2	3	-	-	-	-	-	3	1	1
C302.5	3	3	3	3	2	2	3	-	-	-	-	1	3	1	1

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

C302.6	3	3	2	3	2	2	3	-	-	-	-	1	3	1	1
C302	3	3	3	3	2	2	3	-	-	-	-	1	3	1	1

C303 - EC8552 Computer Architecture and Organization

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C303.1	Describe data representation, instruction formats and the operation of a digital computer	1,2,3,,4,5,6,10,12	1,2,3
C303.2	Illustrate the fixed point and floating-point arithmetic for ALU operation.	1,2,3,,4,5,6,10,12	1,2,3
C303.3	Discuss about implementation schemes of control unit and pipeline performance	1,2,3,,4,5,6,10,12	1,2,3
C303.4	Explain the concept of various memories, interfacing of processors	1,2,3,,4,5,6,10,12	1,2,3
C303.5	Explain the concept of various organization of multiple processors	1,2,3,,4,5,6,10,12	1,2,3
C303.6	Discuss parallel processing technique and unconventional architectures	1,2,3,,4,5,6,10,12	1,2,3

Mapping of COs, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C303.1	3	3	3	3	2	1	-	-	-	1	-	1	2	1	1
C303.2	3	3	3	3	2	1	-	-	-	1	-	1	2	1	1
C303.3	3	3	3	3	2	1	-	-	-	1	-	1	2	1	1
C303.4	3	3	3	3	2	1	-	-	-	1	-	1	2	1	1
C303.5	3	3	3	3	2	1	-	-	-	1	-	1	2	1	1
C303.6	3	3	3	3	2	1	-	-	-	1	-	1	2	1	1
C303	3	3	3	3	2	1	-	-	-	1	-	1	2	1	1

C304 - EC8551 Communication Networks

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C304.1	Identify the components required to build different types of networks	1,2,3,4,5,6,7,10	1,2,3
C304.2	Choose the required functionality at each layer for given application	1,2,3,4,5,6,7,10	1,2,3
C304.3	Identify solution for each functionality at each layer	1,2,3,4,5,6,7,10	1,2,3
C304.4	Trace the flow of information from one node to another node in the network	1,2,3,4,5,6,7,10	1,2,3
C304.5	Describe the Internet Architecture and Link Layer Services	1,2,3,4,5,6,7,10	1,2,3

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

	Apply various routing protocols and algorithms for a given network along		
C304.6	with IP addresses	1,2,3,4,5,6,7,10	1,2,3

Mapping of COs, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C304.1	3	3	2	2	2	1	2	-	-	2	-	-	3	2	1
C304.2	3	2	-	1	-	-	-	-	-	2	-	-	3	2	1
C304.3	3	3	-	-	-	-	-	-	-	2	-	-	3	2	1
C304.4	3	3	2	2	2	-	-	-	-	2	-	-	3	2	1
C304.5	3	3	2	2	2	1	-	-	-	2	-	-	3	2	1
C304.6	3	3	2	2	2	1	-	-	-	2	-	-	3	2	1
C304	3	3	2	2	2	1	2	-	-	2	-	-	3	2	1

C305 - EC8073 Medical Electronics I

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C305.1	Know the human body electro- physiological parameters and recording of bio-potentials	1,2,3,4,5,6,7,12	1,2
C305.2	Comprehend the non-electrical physiological parameters and their measurement – body temperature, blood pressure, pulse, blood cell count, blood flow meter etc.	1,2,3,4,5,6,7,12	1,2
C305.3	Interpret the various assist devices used in the hospitals viz. pacemakers, defibrillators, dialyzers and ventilators	1,2,3,4,5,6,7,12	1,2
C305.4	Comprehend physical medicine methods eg. ultrasonic, shortwave, microwave surgical diathermies , and bio-telemetry principles and methods	1,2,3,4,5,6,7,12	1,2
C305.5	Know about recent trends in medical instrumentation	1,2,3,4,5,6,7,12	1,2
C305.6	Gain knowledge about various medical equipment	1,2,3,4,5,6,7,12	1,2

Mapping of COs, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C305.1	2	2	2	2	1	1	-	-	-	-	-	1	2	1	-
C305.2	2	2	2	1	1	1	-	-	-	-	-	-	2	1	-
C305.3	2	2	2	2	1	-	2	-	-	-	-	-	2	1	-

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C305.4	2	2	2	2	-	-	-	-	-	-	-	-	2	1	-
C305.5	2	2	2	2	-	-	-	-	-	-	-	-	2	1	-
C305.6	-	2	-	2	1	1	-	-	-	-	-	-	2	1	-
C305	2	2	2	2	1	1	2	-	-	-	-	1	2	1	-

C306 – OMD 551 Basics of Bio medical Instrumentation

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C306.1	To Learn the different bio potential and its propagation.	1,2,3,4,5,7,10,11,12	1,2,3
C306.2	To get Familiarize the different electrode placement for various physiological recording	1,2,3,4,5,7,10,11,12	1,2,3
C306.3	Students will be able design bio amplifier for various physiological recording	1,2,3,4,5,7,10,11,12	1,2,3
C306.4	Students will understand various technique non electrical physiogical measurements	1,2,3,4,5,7,10,11,12	1,2,3
C306.5	Understand the different biochemical measurements	1,2,3,4,5,7,10,11,12	1,2,3
C306.6	Categorize the different types of biochemical measurement	1,2,3,4,5,7,10,11,12	1,2,3

Mapping of COs, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C306.1	3	2	2	1	1	-	-	-	-	-	1	1	3	2	1
C306.2	3	2	2	2	1	-	1	-	-	1	2	1	3	2	1
C306.3	3	2	2	1	1	-	1	-	-	1	2	1	3	2	1
C306.4	3	2	2	1	2	-	2	-	-	1	1	1	3	2	1
C306.5	3	2	2	1	1	-	2	-	-	1	1	1	3	2	1
C306.6	3	2	2	-	1	-	2	-	-	1	1	1	3	2	1
C306	3	2	2	1	1	-	2	-	-	1	1	1	3	2	1

C307- EC8562 Digital Signal Processing Laboratory

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C307.1	Carryout basic signal processing operations	1,2,3,4,5,6,11,12	1,2,3
C307.2	Demonstrate their abilities towards MATLAB based implementation of various DSPsystems	1,2,3,4,5,6,11,12	1,2,3
C307.3	Analyze the architecture of a DSP Processor	1,2,3,4,5,6,11,12	1,2,3
C307.4	Design and Implement the FIR and IIR Filters in DSP Processor for performingfiltering operation over real-time signals	1,2,3,4,5,6,11,12	1,2,3
C307.5	Design a DSP system for various applications of DSP	1,2,3,4,5,6,11,12	1,2,3
C307.6	Interpret the findings with appropriate technological / research citation	1,2,3,4,5,6,11,12	1,2,3

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
C307.1	3	2	2	2	2	2	-	-	-	-	-	-	3	2	1
C307.2	3	2	2	2	2	2	-	-	-	-	1	2	3	2	1
C307.3	3	2	2	2	2	2	-	-	-	-	-	2	3	-	1
C307.4	3	2	2	2	3	2	-	-	-	-	3	2	3	2	1
C307.5	3	2	2	2	3	2	-	-	-	-	3	2	3	2	1
C307.6	3	2	2	2	3	2	-	-	-	-	3	2	3	2	1
C307	3	2	2	2	3	2	-	-	-	-	3	2	3	2	1

C308 - EC8561 - COMMUNICATION SYSTEMS LABORATORY

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C308.1	Simulate & validate the various functional modules of a communication system	1,2,3,4,5,6,10,11,12	1,2
C308.2	Demonstrate their knowledge in base band signaling schemes through implementation of digital modulation schemes	1,2,3,4,5,6,10,11,12	1,2
C308.3	Apply various channel coding schemes & demonstrate their	1,2,3,4,5,6,10,11,12	1,2

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

	capabilitiestowards the improvement of the noise performance of communication system		
C308.4	Simulate end-to-end communication Link	1,2,3,4,5,6,10,11,12	1,2
C308.5	Express the Engineering activities with effective presentation and report.	1,2,3,4,5,6,10,11,12	1,2
C308.6	Perform task as an individual and / or team member to manage the task in time	1,2,3,4,5,6,10,11,12	1,2

Mapping of COs, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C308.1	3	-	-	3	3	-	-	-	-	-	3	3	2	2	-
C308.2	3	3	3	3	3	-	-	-	-	2	-	-	2	2	-
C308.3	3	3	3	2	3	-	-	-	-	2	-	-	2	2	-
C308.4	3	3	3	3	3	-	-	-	-	2	3	3	2	2	-
C308.5	-	-	-	-	-	3	-	-	-	-	-	-	2	2	-
C308.6	-	-	-	3	-	3	-	-	-	2	-	3	2	-	-
C308	3	3	3	3	3	3	-	-	-	2	3	3	2	2	-

C309 - EC8563 COMMUNICATION NETWORKS LABORATORY

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C309.1	Communicate between two desktop computers	1,2,3,4,5,6,9,11,12	1,2
C309.2	Implement the different protocols	1,2,3,4,5,6,9,11,12	1,2
C309.3	Program using sockets.	1,2,3,4,5,6,9,11,12	1,2
C309.4	Implement and compare the various routing algorithms	1,2,3,4,5,6,9,11,12	1,2
C309.5	Use the simulation tool	1,2,3,4,5,6,9,11,12	1,2
C309.6	Perform task as an individual and / or team member to manage the task in time	1,2,3,4,5,6,9,11,12	1,2

Mapping of COs, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C309.1	3	2	2	2	2	1	-	-	1	-	2	2	3	1	-
C309.2	3	3	2	2	3	1	-	-	-	-	2	2	3	1	-
C309.	3	3	3	2	3	1	-	-	-	-	2	1	3	-	-

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
3															
C309.4	3	3	2	2	3	-	-	-	-	-	2	2	3	-	-
C309.5	3	3	2	2	2	1	-	-	-	-	2	2	3	1	-
C309.6	3	2	2	2	2	1	-	-	-	-	2	2	3	1	-
C309	3	3	2	2	3	1	-	-	-	-	2	2	3	1	-

VI - Semester

C310 - EC8691 MICROPROCESSORS AND MICROCONTROLLERS

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C310.1	Execute programs based on 8086 microprocessor	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
C310.2	Design Memory Interfacing circuits	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
C310.3	Design and interface I/O circuits	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
C310.4	Design and implement 8051 microcontroller based systems	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
C310.5	Explain about various interfacing modules with 8051 microcontroller	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
C310.6	Illustrate the architecture of 8051 microcontroller	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3

Mapping of COs, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C310.1	3	3	3	2	-	-	-	-	1	3	3	3	1	1	1
C310.2	2	3	3	2	3	3	-	3	-	3	3	3	1	1	1
C310.3	3	3	3	2	3	3	-	3	2	3	3	3	3	3	1
C310.4	3	3	3	2	3	-	-	3	2	3	3	3	1	1	1
C310.5	3	3	3	2	3	3	2	3	2	-	3	3	3	1	1
C310.6	3	3	3	2	3	3	2	3	2	-	3	3	3	1	1
C310	3	3	3	2	3	3	2	3	2	3	3	3	2	1	1

C311- EC8095 VLSI DESIGN

After the course, the student should be able to:

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

CO	Course Outcomes	POs	PSOs
C311.1	Realize the concepts of digital building blocks using MOS transistor	1,2,3,4,5	1,2,3
C311.2	Design combinational MOS circuits and power strategies.	1,2,3,4,5	1,2,3
C311.3	Design and construct Sequential Circuits and Timing systems	1,2,3,4,5	1,2,3
C311.4	Design arithmetic building blocks and memory subsystems.	1,2,3,4,5	1,2,3
C311.5	Apply and implement FPGA design flow and testing	1,2,3,4,5	1,2,3
C311.6	Explain about the implementation strategies for FPGA and Testing Methodologies	1,2,3,4,5	1,2,3

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
C311.1	3	3	2	2	2	-	-	-	-	-	-	-	3	2	1
C311.2	3	3	2	2	2	-	-	-	-	-	-	-	3	2	1
C311.3	3	3	2	2	2	-	-	-	-	-	-	-	3	2	1
C311.4	3	3	2	2	2	-	-	-	-	-	-	-	3	2	1
C311.5	3	3	2	2	-	-	-	-	-	-	-	-	3	2	1
C311.6	3	3	2	2	-	-	-	-	-	-	-	-	3	2	1
C311	3	3	2	2	2	-	-	-	-	-	-	-	3	2	1

C312- EC8652 Wireless Communication

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C312.1	Characterize a wireless channel and evolve the system design specifications	1,2,3,4,5,6,8,10,12	1,3
C312.2	Design a cellular system based on resource availability and traffic demands	1,2,3,4,5,6,8,10,12	1,3
C312.3	Identify suitable signaling and multipath mitigation techniques for the wirelesschannel and system under consideration.	1,2,3,4,5,6,8,10,12	1,3
C312.4	Analyze the various mitigation techniques to address fading and interference	1,2,3,4,5,6,8,10,12	1,3

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

		POs	PSOs
	in multipath propagation		
C312.5	Compare the performance of channel using various propagation models	1,2,3,4,5,6,8,10,12	1,3
C312.6	Use various signalling schemes for wireless communication channels	1,2,3,4,5,6,8,10,12	1,3

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
C312.1	3	3	-	2	1	1	-	-	-	1	-	1	3	-	1
C312.2	3	3	2	2	-	1	-	1	-	1	-	2	3	-	1
C312.3	3	3	-	2	2	1	-	-	-	1	-	2	3	-	1
C312.4	3	3	-	2	2	1	-	-	-	1	-	2	3	-	1
C312.5	3	3	-	2	2	1	-	-	-	1	-	2	3	-	1
C312.6	3	3	-	2	2	1	-	-	-	1	-	2	3	-	1
C312	3	3	2	2	2	1	-	-	-	1	-	2	3	-	1

C313 - MG8591 Principles of Management

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C313.1	Upon completion of the course, students will be able to have clear understanding	4,6,7,8,9,10,11,12	2,3
C313.2	Managerial functions like planning, organizing, staffing, leading & controlling and have samebasic knowledge on international aspect of management	4,6,7,8,9,10,11,12	2,3
C313.3	Explain controlling through control techniques and reporting	4,6,7,8,9,10,11,12	2,3
C313.4	Describe directing through motivation, leadership and effective communication	4,6,7,8,9,10,11,12	2,3
C313.5	Elaborate organizing by Job design, HR planning, training and development	4,6,7,8,9,10,11,12	2,3
C313.6	Describe planning tools and techniques used in management	4,6,7,8,9,10,11,12	2,3

Mapping of COs, PSOs with POs

Course	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO1	PO1	PO1	PSO	PSO	PSO

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

	1	2	3	4	5	6	7	8	9	0	1	2	1	2	3
C313.1	-	-	-	2	-	2	1	-	3	1	3	2	-	2	1
C313.2	-	-	-	2	-	2	-	-	3	3	3	3	-	-	1
C313.3	-	-	-	2	-	2	2	-	3	3	3	3	-	-	1
C313.4	-	-	-	2	-	2	2	-	3	3	3	3	-	2	1
C313.5	-	-	-	2	-	2	2	3	3	3	3	3	-	2	1
C313.6	-	-	-	2	-	2	2	-	3	3	3	3	-	2	1
C313	-	-	-	2	-	2	2	3	3	3	3	3	-	2	1

C314 - EC8651 TRANSMISSION LINES AND RF SYSTEMS

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C314.1	Explain the characteristics of transmission lines and its losses	1,2,3,4,5	1,2,3
C314.2	Write about the standing wave ratio and input impedance in high frequencytransmission lines	1,2,3,4,5	1,2,3
C314.3	Analyze impedance matching by stubs using smith charts	1,2,3,4,5	1,2,3
C314.4	Analyze the characteristics of TE and TM waves	1,2,3,4,5	1,2,3
C314.5	Design a RF transceiver system for wireless communication	1,2,3,4,5	1,2,3
C314.6	Demonstrate the concept of RF system transceiver design	1,2,3,4,5	1,2,3

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
C314.1	3	3	2	-	-	-	-	-	-	-	-	-	1	1	1
C314.2	3	3	-	-	-	-	-	-	-	-	-	-	1	1	1
C314.3	3	3	-	2	2	-	-	-	-	-	-	-	-	1	1
C314.4	3	3	-	2	2	-	-	-	-	-	-	-	-	1	1
C314.5	3	3	-	-	2	-	-	-	-	-	-	-	-	1	1

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

C316.2	Interface different I/Os with processor	1,2,3,4,5,9,10,11,12	1,2,3
C316.3	Generate waveforms using Microprocessors	1,2,3,4,5,9,10,11,12	1,2,3
C316.4	Execute Programs in 8051	1,2,3,4,5,9,10,11,12	1,2,3
C316.5	Explain the difference between simulator and Emulator	1,2,3,4,5,9,10,11,12	1,2,3
C316.6	Use a combination of Hardware and software to solve a real time problem	1,2,3,4,5,9,10,11,12	1,2,3

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
C316.1	3	3	3	3	3	-	-	-	3	3	3	3	2	2	1
C316.2	3	3	3	3	3	-	-	-	3	3	3	3	2	2	1
C316.3	3	3	3	3	3	-	-	-	3	3	3	3	2	2	1
C316.4	3	3	3	3	3	-	-	-	3	3	3	3	2	2	1
C316.5	3	3	3	3	3	-	-	-	3	3	3	3	2	2	1
C316.6	3	3	3	3	3	-	-	-	3	3	3	3	2	2	1
C316	3	3	3	3	3	-	-	-	3	3	3	3	2	2	1

C317- EC8661 VLSI Design Laboratory

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C317.1	Write HDL code for basic as well as advanced digital integrated circuit	1,2,3,4,5,10,11,12	1,2
C317.2	Import the logic modules into FPGA Boards	1,2,3,4,5,10,11,12	1,2
C317.3	Synthesize Place and Route the digital IPs	1,2,3,4,5,10,11,12	1,2
C317.4	Design, Simulate and Extract the layouts of Digital Analog IC Blocks using EDAtools	1,2,3,4,5,10,11,12	1,2
C317.5	Exhibit ethical principles in engineering practices	1,2,3,4,5,10,11,12	1,2
C317.6	Perform task as an individual and / or team member to manage the task in time	1,2,3,4,5,10,11,12	1,2

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

Mapping of COs, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C317.1	3	-	-	-	3	-	-	-	-	-	2	2	2	2	-
C317.2	3	3	3	-	3	-	-	-	-	2	-	-	2	2	-
C317.3	3	3	3	3	3	-	-	-	-	2	-	-	2	2	-
C317.4	3	3	-	3	-	-	-	-	-	2	2	2	2	2	-
C317.5	3	3	-	3	-	-	-	-	-	-	-	-	2	2	-
C317.6	3	3	-	3	3	-	-	-	-	2	-	2	2	-	-
C317	3	3	-	3	3	-	-	-	-	2	2	2	2	2	

C318 - EC8611 - Technical Seminar

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C318.1	Describe the selection of a subject, narrowing the subject into a topic and stating an objective	1,2,3,12	1,2
C318.2	Illustrate to collect the relevant bibliography and preparing a working outline.	1,2,3,12	1,2
C318.3	Outline the understanding of papers and authors contributions and critically analyzing each paper.	1,2,3,12	1,2
C318.4	Outline the linking odf papers and preparing a draft of the paper.	1,2,3,12	1,2
C318.5	Describe the writing of final Paper and giving final Presentation	1,2,3,12	1,2
C318.6	Express the Engineering activities with effective presentation and report.	1,2,3,12	1,2

Mapping of COs, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C318.1	3	3	2	-	-	-	-	-	-	-	-	1	2	1	-
C318.2	3	3	2	-	-	-	-	-	-	-	-	1	2	1	-
C318.3	3	3	2	2	-	-	-	-	-	-	-	1	2	1	-
C318.4	3	3	2	2	-	-	-	-	-	-	-	1	2	1	-

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

C318.5	3	3	2	2	1	-	-	-	-	-	-	1	2	1	-
C318.6	3	3	2	2	1	-	-	-	-	-	-	1	2	1	-
C318	3	3	2	2	1	-	-	-	-	-	-	1	2	1	-

C319 - HS8581 Professional Communication

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C319.1	Make effective presentations	2,5,6,8,9,10,11,12	-
C319.2	Participate confidently in Group Discussions.	2,5,6,8,9,10,11,12	-
C319.3	Attend job interviews and be successful in them.	2,5,6,8,9,10,11,12	-
C319.4	Develop adequate Soft Skills required for the workplace	2,5,6,8,9,10,11,12	-
C319.5	Enhance the Employability & Career Skills	2,5,6,8,9,10,11,12	-
C319.6	Express the Engineering activities with effective presentation and report.	2,5,6,8,9,10,11,12	-

Mapping of COs, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C319.1	-	-	-	-	-	-	-	-	2	3	2	-	-	-	-
C319.2	-	-	-	-	-	2	-	2	-	3	-	-	-	-	-
C319.3	-	-	-	-	-	2	-	2	2	3	-	-	-	-	-
C319.4	-	-	-	-	-	2	-	-	-	-	-	2	-	-	-
C319.5	-	-	-	-	-	-	-	-	2	3	2	2	-	-	-
C319.6	-	2	-	-	1	-	-	-	-	3	-	-	-	-	-
C319	-	2	-	-	1	2	-	-	2	3	2	2	-	-	-

VII – Semester
C401 - EC8701 Antennas and Microwave Engineering

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
	Apply the basic principles and evaluate antenna parameters and		

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

C401.1	link power budgets	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
C401.2	Design and assess the performance of various antennas	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
C401.3	Design a microwave system given the application specifications	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
C401.4	Able to differentiate the operating power gain, Available power gain, Transducer gain.	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
C401.5	Acquired better knowledge about the amplifier power relations.	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
C401.6	Easily identified the corresponding amplifier power relation equations for solving the problems.	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
C401.1	2	2	2	2	3	-	-	-	-	-	-	1	2	2	1
C401.2	2	2	2	2	3	-	-	-	-	-	1	1	2	2	1
C401.3	2	2	2	2	3	-	-	-	-	2	2	1	2	2	1
C401.4	2	2	2	2	3	-	-	-	-	2	2	-	2	2	1
C401.5	2	2	2	2	3	-	-	-	-	2	2	1	2	2	1
C401.6	-	-	-	-	-	3	3	3	1	-	-	-	2	2	1
C401	2	2	2	2	3	3	3	3	1	2	2	1	2	2	1

C402 – EC 8751 Optical Communication

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C402.1	Realize Basic Elements In Optical Fibers, Different Modes And Configurations.	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
C402.2	Analyze The Transmission Characteristics Associated With Dispersion And PolarizationTechniques.	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
C402.3	Design Optical Sources And Detectors With Their Use In Optical Communication System.	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
C402.4	Analyze the different types of noise in optical Receiver.	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
C402.5	Construct Fiber Optic Receiver Systems, Measurements And Techniques.	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
C402.6	Design Optical Communication Systems And Its Networks.	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

Mapping of COs, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C402.1	3	2	-	-	-	-	-	-	1	1	1	2	1	1	1
C402.2	3	2	2	2	-	-	-	-	1	1	1	2	1	1	1
C402.3	3	2	2	2	2	-	-	-	-	-	-	2	1	1	1
C402.4	3	2	2	2	2	-	-	-	-	-	-	2	1	1	1
C402.5	3	2	2	2	2	-	-	-	-	-	-	2	1	1	1
C402.6	3	2	2	2	2	1	1	1	1	1	2	2	3	1	1
C402	3	2	2	2	2	1	1	1	1	1	1	2	1	1	1

C403 – EC 8791 EMBEDDED AND REAL TIME SYSTEMS

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C403.1	Describe the architecture and programming of ARM processor	1,2,3,4,5,9,10,11,12	1,2,3
C403.2	Outline the concepts of embedded systems	1,2,3,4,5,9,10,11,12	1,2,3
C403.3	Explain the basic concepts of real time operating system design	1,2,3,4,5,9,10,11,12	1,2,3
C403.4	Model real-time applications using embedded-system concepts	1,2,3,4,5,9,10,11,12	1,2,3
C403.5	List the concepts of real time operating systems	1,2,3,4,5,9,10,11,12	1,2,3
C403.6	Develop a model of an embedded system	1,2,3,4,5,9,10,11,12	1,2,3

Mapping of COs, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C403.1	2	2	1	2	3	-	-	-	-	-	-	-	2	3	1
C403.2	2	2	2	2	3	-	-	-	-	-	-	-	2	3	1
C403.3	2	2	1	2	3	-	-	-	-	-	-	-	2	3	1
C403.4	2	2	2	2	3	-	-	-	-	-	2	2	2	3	1
C403.	2	2	2	2	3	-	-	-	2	2	2	2	2	3	1

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

5															
C403.6	2	2	2	2	3	-	-	-	2	2	2	2	2	3	1
C403	2	2	2	2	3	-	-	-	2	2	2	2	2	3	1

C404 - EC8702 Ad hoc and Wireless Sensor Networks

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C404.1	Know the basics of Ad hoc networks and Wireless Sensor Networks	1,2,3,4,5,11,12	1,2,3
C404.2	Apply this knowledge to identify the suitable routing algorithm based on the network and user requirement	1,2,3,4,5,11,12	1,2,3
C404.3	Apply the knowledge to identify appropriate physical and MAC layer protocols	1,2,3,4,5,11,12	1,2,3
C404.4	Explain the transport layer and security issues possible in Ad hoc and sensor networks.	1,2,3,4,5,11,12	1,2,3
C404.5	Explain the OS used in Wireless Sensor Networks and build basic modules	1,2,3,4,5,11,12	1,2,3
C404.6	Have an in-depth knowledge on sensor network architecture and design issues	1,2,3,4,5,11,12	1,2,3

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
C404.1	3	3	-	-	1	-	-	-	-	-	1	1	2	3	2
C404.2	3	3	1	1	1	-	-	-	-	-	1	1	2	1	2
C404.3	3	3	2	2	1	-	-	-	-	-	1	1	2	2	2
C404.4	3	3	3	3	1	-	-	-	-	-	1	1	2	2	2
C404.5	3	3	3	3	1	-	-	-	-	-	1	1	2	2	2
C404.6	3	3	3	3	1	-	-	-	-	-	1	1	2	2	2
C404	3	3	2	2	1	-	-	-	-	-	1	1	2	2	2

C405 - GE8071 Disaster Management

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C405.1	Differentiate the types of disasters, causes and their impact on environment and society	1,2,3,4,5	1,2,3

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

CO	Course Outcomes	POs	PSOs
C405.2	Assess vulnerability and various methods of risk reduction measures as well as mitigation	1,2,3,4,5	1,2,3
C405.3	Draw the hazard and vulnerability profile of India, Scenarios in the Indian context, Disaster damage assessment and management.	1,2,3,4,5	1,2,3
C405.4	exposure to disasters, their significance and types.	1,2,3,4,5	1,2,3
C405.5	Explain the relationship between vulnerability, disasters, disaster prevention and risk reduction	1,2,3,4,5	1,2,3
C405.6	enhance awareness of institutional processes in the country	1,2,3,4,5	1,2,3

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
C405.1	3	3	3	2	2	-	-	-	-	-	-	-	3	2	1
C405.2	3	3	3	2	2	-	-	-	-	-	-	-	3	2	1
C405.3	3	3	2	2	2	-	-	-	-	-	-	-	2	1	1
C405.4	3	3	2	2	2	-	-	-	-	-	-	-	3	3	1
C405.5	3	3	3	3	3	-	-	-	-	-	-	-	3	2	1
C405.6	3	3	3	3	3	-	-	-	-	-	-	-	3	2	1
C405	3	3	3	3	3	-	-	-	-	-	-	-	3	2	1

C406- OIC751 Transducer Engineering

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C406.1	Explain how physical quantities are measured and how they are converted to electrical or other forms.	1.2.3.4.5.6.7.12	1,2,3
C406.2	Have an adequate knowledge in resistance, transducers.	1.2.3.4.5.6.7.12	1,2,3
C406.3	Develop the knowledge of inductance and capacitance transducers.	1.2.3.4.5.6.7.12	1,2,3
C406.4	Explain the characteristics of Transducers	1.2.3.4.5.6.7.12	1,2,3
C406.5	Ability to model and analyze transducers	1.2.3.4.5.6.7.12	1,2,3
C406.6	Impart knowledge on various types of transducers	1.2.3.4.5.6.7.12	1,2,3

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
C406.	3	2	2	3	1	3	2	-	-	-	-	1	3	3	3

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

1.															
C406.2	3	2	2	3	1	3	2	-	-	-	-	1	3	3	3
C406.3	1	2	1	3	1	3	2	-	-	-	-	1	3	3	3
C406.4	1	2	3	1	3	3	2	-	-	-	-	1	3	3	3
C406.5	2	2	2	1	3	3	2	-	-	-	-	1	3	3	3
C406.6	2	2	2	1	3	3	2	-	-	-	-	1	3	3	3
C406	2	2	2	2	2	3	2	-	-	-	-	1	3	3	3

C407 - EC8711 Embedded Laboratory

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C407.1	Explain the characteristics of transmission lines and its losses.	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
C407.2	Calculate the standing wave ratio and input impedance in high frequencytransmission lines.	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
C407.3	Analyze impedance matching by stubs using Smith Charts.	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
C407.4	Comprehend the characteristics of TE and TM waves.	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
C407.5	Design a RF transceiver system for wireless communication	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
C407.6	Explain the characteristics of Electronic components at RF frequency.	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3

Mapping of COs, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C407.1	3	3	-	-	-	-	-	-	-	3	3	2	3	2	1
C407.2	3	3	3	3	2	2	-	-	-	3	-	2	3	2	1
C407.3	3	3	3	3	-	2	2	2	2	3	3	2	3	2	1
C407.4	3	3	3	3	-	2	2	2	-	3	3	2	3	2	1
C407.5	3	3	3	3	2	-	2	2	2	3	3	2	3	2	1
C407.6	3	3	3	-	-	-	-	2	-	3	-	2	3	2	1
C407	3	3	3	3	2	2	2	2	2	3	3	2	3	2	1

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

C408 - EC8761 Advanced Communication Laboratory

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C408.1	Analyze the performance of simple optical link by measurement of losses	1,2,3,4,5	1,2,3
C408.2	Analyzing the mode characteristics of fiber	1,2,3,4,5	1,2,3
C408.3	Analyze the Eye Pattern, Pulse broadening of optical fiber and the impact on BER	1,2,3,4,5	1,2,3
C408.4	Estimate the Wireless Channel Characteristics	1,2,3,4,5	1,2,3
C408.5	Analyze the performance of Wireless Communication System	1,2,3,4,5	1,2,3
C408.6	Explain the intricacies in Microwave System design	1,2,3,4,5	1,2,3

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
C408.1	3	2	-	-	-	-	-	-	-	-	-	-	-	-	1
C408.2	3	2	2	2	-	-	-	-	-	-	-	-	2	-	1
C408.3	3	2	2	2	-	-	-	-	-	-	-	-	2	-	1
C408.4	3	2	2	2	-	-	-	-	-	-	-	-	2	-	1
C408.5	3	2	2	2	2	-	-	-	-	-	-	-	2	2	1
C408.6	3	2	2	2	2	-	-	-	-	-	-	-	2	2	1
C408	3	2	2	2	2	-	-	-	-	-	-	-	2	2	1

C312- GE8076 Professional Ethics in Engineering

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C409.1	To acquire the basic knowledge of human values, morals, ethics, industrial standards, code of ethics and role of professional ethics in the engineering field.	1,2,3,6,7,8,9,10,12	1,2,3
C409.2	To have an awareness of professional rights and responsibilities of an engineer, and to have an understanding for safety and risk benefit analysis.	1,2,3,6,7,8,9,10,12	1,2,3
C409.3	To imbibe the various ethical theories developed and apply them for a professional and societal advancement.	1,2,3,6,7,8,9,10,12	1,2,3
C409.4	To imbibe adequate knowledge about the culture & the value system	1,2,3,6,7,8,9,10,12	1,2,3

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

CO		Course Outcomes	POs	PSOs
		adopted by MNC's, local business houses and to create an ethical based work environment.		
C409.5		To understand and solve the employees' conflict & grievances in an amicable and ethical way.	1,2,3,6,7,8,9,10,12	1,2,3
C409.6		Formulate and provide solutions to overcome ethical issues for win-win outcome	1,2,3,6,7,8,9,10,12	1,2,3

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
C409.1	3	2	2	-	-	1	1	3	2	2	-	2	3	2	1
C409.2	3	2	2	-	-	1	1	3	2	2	-	2	3	2	1
C409.3	3	2	2	-	-	1	1	3	2	2	-	2	3	2	1
C409.4	3	2	2	-	-	1	1	3	2	2	-	2	3	2	1
C409.5	3	2	2	-	-	1	1	3	2	2	-	2	3	2	1
C409.6	3	2	2	-	-	1	1	3	2	2	-	2	3	2	1
C409	3	2	2	-	-	1	1	3	2	2	-	2	3	2	1

C410 – EC8094 Satellite Communication

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C410.1	Recite the basic concepts of satellite orbits and its parameters	1,2,3,4,5,6,7,9,10,11,12	1,2
C410.2	Explain various earth segment and space segment modules in the satellite system	1,2,3,4,5,6,7,9,10,11,12	1,2
C410.3	Calculate Orbital parameters, Satellite link budget and its system performance	1,2,3,4,5,6,7,9,10,11,12	1,2
C410.4	Analyze various access techniques and coding schemes in satellite systems	1,2,3,4,5,6,7,9,10,11,12	1,2
C410.5	Compare various launching procedures of satellites and its application	1,2,3,4,5,6,7,9,10,11,12	1,2
C410.6	Apply various communication techniques for satellite applications	1,2,3,4,5,6,7,9,10,11,12	1,2

Mapping of COs, PSOs with POs

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3

G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C410.1	3	3	2	2	2	2	-	-	2	2	2	3	2	1	-
C410.2	3	3	2	2	2	2	2	-	2	2	2	3	2	1	-
C410.3	3	3	2	2	2	2	2	-	2	2	2	3	2	1	-
C410.4	3	3	2	2	2	2	2	-	20	2	2	3	2	1	-
C410.5	3	3	2	2	2	2	2	-	-	2	2	3	2	1	-
C410.6	3	3	2	2	2	-	-	-	2	2	2	3	2	1	-
C410	3	3	2	2	2	2	2	-	2	2	2	3	2	1	-

C411 – EC8811 Project Work

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
C411.1	Able to understand the concepts and design process of various electronics circuits and communication engineering	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
C411.2	To develop and implement innovative ideas.	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
C411.3	Able to identify and solving the real time problems	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
C411.4	Able to attain leadership quality.	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
C411.5	Able to publish the Research Finding through conference and journals and able to get the patent	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3
C411.6	Able to create a platform to enable the students to become an entrepreneur	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3

Mapping of COs, PSOs with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C411.1	3	3	2	2	3	2	2	2	2	1	2	2	3	3	2
C411.2	3	3	2	2	3	2	2	2	2	1	2	2	3	3	2
C411.3	3	3	2	2	3	2	2	2	2	1	2	2	3	3	2
C411.4	3	3	2	2	3	2	2	2	2	1	2	2	3	3	2
C411.5	3	3	2	2	3	2	2	2	2	1	2	2	3	3	2
C411.6	3	3	2	2	3	2	2	2	2	1	2	2	3	3	2

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

C411	3	3	2	2	3	2	2	2	2	1	2	2	3	3	2

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
Indra Ganesan College of Engineering
IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.