CO-PO- PSO mapping matrices of all courses

Department of Electronics and Communication Engineering

Session: 2021-22

PRIYADARSHINI COLLEGE OF ENGINEERING

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Department of Electronics & Communication Engineering

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Program Outcomes

PO1	**Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization for the solution of complex engineering problems.
PO2	**Problem analysis**: Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics natural sciences, and engineering sciences.
PO3	**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.
PO4	**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.
PO5	**Modern tool usage :** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
PO6	**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.
PO7	**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.
PO8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	**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 instruction.
PO11	**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.
PO12	**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.

Program Specific Outcome

PSO1	To possess technical knowledge in the area of Communication, Signal Processing, Embedded System, Devices and Circuits and emerging technologies
PSO2	To demonstrate the technical skills and apply the knowledge of hardware and software tools in the field of Electronics and Communication.

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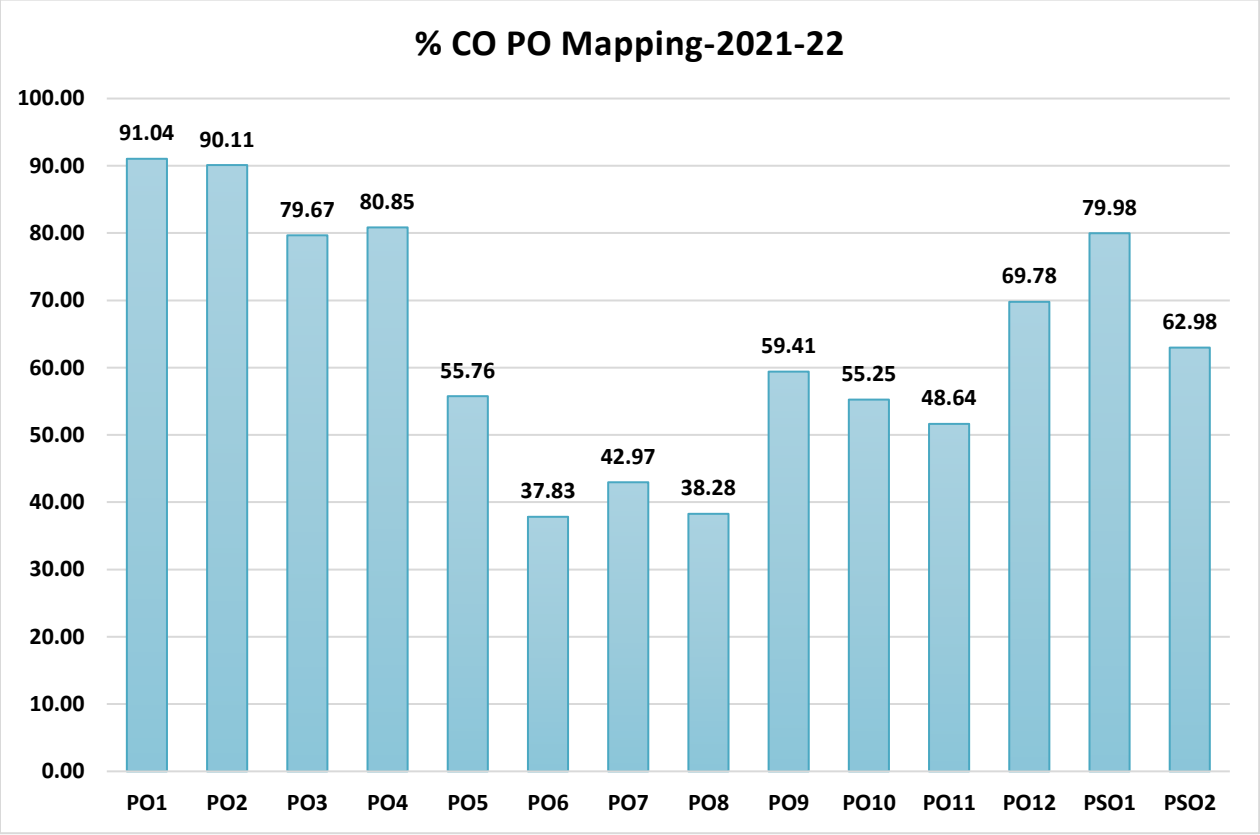
CO PO Mapping 2021-22

PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO Mapping	2.73	2.70	2.39	2.43	1.67	1.14	1.29	1.15	1.78	1.66	1.45	2.09	2.40	1.89
% CO Mapping	91.04	90.11	79.67	80.85	55.76	37.83	42.97	38.28	59.41	55.25	48.64	69.78	79.98	62.98



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Year of study: 2021-22

Course code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101	1.75	1.75	1.8	1	1	1	1	-	-	1	1	-	2	1
C102	3	3	1	3	3	-	1	1	1	3	-	3	1.4	1.4
C103	3	3	1.6	-	1.4	1.6	2.2	-	-	-	-	1.6	-	-
C104	-	-	-	-	-	-	-	-	-	3	-	2	-	-
C105	-	-	-	2.5	2	-	3	-	-	-	1.3	-	3	3
C106	2.6	2.8	2	2.2	2.25	2.66	2.5	-	-	1.25	1.33	1.2	2	1
C107	3	3	1	3	3	1	1	1	1	3	-	3	2	1.8
C108	2.2	2.2	2.5	-	1.6	2.5	2.5	-	-	-	-	1.6	-	-
C109	3	1	1.25	1	1	1	1	-	1	1	1	2	-	-
C110	-	-	-	2	2	-	3	-	-	-	1.6	-	2	-
C111	1	2.5	1	1.5	2	1	1.33	2	1	-	-	2	-	-
C201	2	1.6	1.2	0.2	0.2	0.2	0.4	-	-	1	0.6	-	1.8	1.8
C202	3	3	3	3	0.8	0.8	0.8	0.8	1	1	-	2	3	2
C202P	**2**	**2**	**2**	**3**	**2**	**1**	**-**	**1**	**3**	**3**	**2**	**3**	**3**	**3**
C203	3	3	3	3	1	1	1	1	1	1	-	2	3	2
C203P	**3**	**3**	**3**	**3**	**2**	**1**	**1**	**2**	**2**	**1**	**2**	**2**	**2**	**2**
C204	3	3	3	3	-	1	1	1	-	2	-	2	3	1
C205	3	3	2	2	1	-	1	1	1	2	2	3	3	1
C206	3	3	3	3	-	1	1	1	-	2	-	2	3	1
C207P	**3**	**3**	**3**	**3**	**3**	**1**	**-**	**-**	**3**	**3**	**2**	**3**	**3**	**3**
C208	3	3	3	2	2	1	-	1	-	2	-	2	3	2
C208P	**2**	**2**	**2**	**3**	**3**	**1**	**-**	**-**	**3**	**3**	**2**	**3**	**3**	**3**
C209	3	3	3	2	-	1	1	1	1	2	-	3	3	2
C209P	**3**	**3**	**3**	**3**	**1**	**1**	**-**	**-**	**2**	**2**	**2**	**2**	**2**	**2**
C210	3	3	3	3	1	1	1	1	1	2	-	2	3	2
C211	3	3	3	2	-	1	1	1	1	1	-	2	1	2
C212	2	1.6	1.6	1	1.2	-	-	-	-	-	-	-	1.6	1.6
C213	3	3	3	2	2	-	1	1	1	2	-	3	1	2
C213P	**3**	**3**	**3**	**3**	**2**	**1**	**-**	**-**	**3**	**1**	**2**	**2**	**2**	**2**
C214	**3**	**3**	**3**	**3**	**2**	**1**	**-**	**1**	**3**	**1**	**2**	**2**	**2**	**2**
C215	-	-	-	-	-	-	-	3	3	-	-	3	-	-
C301	**2.50**	**2.67**	**2.33**	**2.17**	**2.00**	**1.50**	-	-	-	**1.67**	-	-	**2.67**	**2.33**
C302	1	**1**	**1**	**1**	**1**	-	-	-	-	**1**	-	**2**	**3**	**2**
C302P	1.5	**2**	**2**	**2**	**2**	-	-	-	**2**	**1**	-	**2**	**2**	**2**
C303	**3**	**3**	**3**	**3**	**1**	-	-	-	**1**	**1**	-	**3**	**3**	**2**
C303P	**3**	**3**	**3**	**3**	**1**	**1**	-	-	**2**	**2**	**2**	**2**	**2**	**2**
C304	**2.33**	**2.33**	-	-	-	-	**0.166**	-	-	-	-	**0.33**	**3**	**1**
C304P	**3**	**3**	**3**	**3**	**1**	**1**	**-**	**-**	**2**	**2**	**2**	**2**	**2**	**2**

C305	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**0.3**	**-**	**2.2**	**2**	**-**	**-**
C306	**1.16**	**1.16**	**0.16**	**-**	**-**	**0.16**	**-**	**-**	**-**	**1**	**-**	**1**	**2**	**1**
C307	**3**	**3**	**2.8**	**2.6**	**-**	**1**	**-**	**-**	**-**	**1**	**-**	**2**	**3**	**2.8**
C307P	**3**	**3**	**3**	**3**	**2**	**1**	**-**	**-**	**3**	**1**	**1**	**2**	**2**	**2**
C308	**3**	**3**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**1**	**1**
C309	**3**	**3**	**3**	**3**	**1**	**-**	**-**	**-**	**1**	**1**	**-**	**2**	**3**	**2**
C309P	**3**	**3**	**3**	**3**	**2**	**1**	**-**	**-**	**3**	**1**	**1**	**2**	**2**	**2**
C310	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**3**	**-**	**2**	**-**	**-**
C311P	**3**	**3**	**3**	**3**	**3**	**1**	**-**	**-**	**3**	**3**	**2**	**3**	**3**	**3**
C401	3	3	1.67	2.67	-	-	-	1	-	1.67	-	2	3	
C401P	**3**	**3**	**3**	**3**	**2**	**1**	**-**	**-**	**3**	**1**	**1**	**2**	**2**	**2**
C402	3	3	2.83	3	1	-	-	-	-	1.17	3	2	2	2
C402P	**3**	**3**	**3**	**3**	**2**	**1**	**-**	**-**	**3**	**1**	**1**	**2**	**2**	**2**
C403	3	3	1.67	2.67	-	-	-	1	-	1.67	-	2	2	2
C404	3	3	3	2	-	1	1	1	1	2	-	2	2	2
C404P	2	2	1	1	2	-	-	-	1	1	**1**	2	2	2
C405	3	3	1.67	2.67	-	-	-	1	-	1.67	-	2	2	2
C407	3	3	2.83	3	1	-	-	1	-	1.17	1	2	3	1
C407P	**3**	**3**	**3**	**3**	**1**	**-**	**-**	**-**	**-**	**2**	**1**	**2**	**3**	**1**
C408	3	2.17	1.83	1.5	1.17	-	-	1	-	-	-	1	2	2
C408P	**3**	**3**	**3**	**3**	**3**	**1**	**1**	**-**	**-**	**1**	**-**	**2**	**2**	**2**
C409	3	3	1.67	2.67	-	-	-	1	-	1.67	-	2	3	1
C410	3	2.67	3	2.67	3	2	-	1	-	-	-	1	3	2
C411	3	3	2	2	1	-	-	1	-	2	-	2	3	1
C412	**1.8**	**1.8**	**1.6**	**1.8**	**1**	**1.6**	**1.33**	**1.5**	**1.3**	**1.6**	**0.8**	**1.6**	**2.5**	**2.3**
Average	**2.73**	**2.70**	**2.39**	**2.43**	**1.67**	**1.14**	**1.29**	**1.15**	**1.78**	**1.66**	**1.45**	**2.09**	**2.40**	**1.89**

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(SEMESTER – III)-CBCS
List of III Semester Subjects with Subject Code

Corse Code as per RTMNU	Course Code	Subject
BEETC-301	C201	Applied Math's-III
BEETC-302T	C202	Components for Electronic circuit design
BEETC-302P	C202P	Components for Electronic circuit design Lab
BEETC-303T	C203	Digital System Design
BEETC-303P	C203P	Digital System Design Lab
BEETC-304P	C204	Network Theory
BEETC-305T	C205	Signals & System
BEETC-306T	C206	Measurement and Instrumentation
BEETC-307P	C207P	Electronics Workshop I Lab

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CO-PO- PSO matrices of all courses

Course Name: Applied Mathematics- C201 (III Sem):

After the completion of Course, the students will be able to:

CO	Statement
C201.1	Apply Laplace Transform to solve ordinary differential equations, Integral equations and Integro- differential equations.
C201.2	Apply Fourier series in the analysis of periodic functions in terms of sine and cosine encountered in engineering problems and Fourier transform to solve integral equations.
C201.3	Describe the concept of differentiating, integrating and expanding of analytic functions in complex numbers and their applications such as evaluation of integrals of complex functions.
C201.4	Solve partial differential equations of first order, higher order with constant coefficients and of second order using method of separation of variables.
C201.5	Analyze real world scenarios to recognize when matrices are appropriate, formulate problems about the scenarios, creatively model these scenarios in order to solve the problems using multiple approaches.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C201.1	3	3	1	1	-	-	-	-	-	1	-	-	2	2
C201.2	3	3	2	1	1	-	-	-	-	1	-	-	2	2
C201.3	3	3	2	1	1	-	-	-	-	1	-	-	1	1
C201.4	3	3	1	1	-	-	-	-	-	1	2	-	2	2
C201.5	3	3	1	1	-	-	-	-	-	1	1	-	2	2
Average	**3**	**3**	**1**	**1**	**0.4**	-	-	-	-	**1**	**0.6**	**-**	**1.8**	**1.8**

Name and Sign of Subject Teacher

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Course Name: Components for Electronic Circuit Design-C202 (III Sem)

After the completion of Course, the students will be able to:

CO	Statement
C202.1	Discuss and demonstrate the principles of semiconductor physics
C202.2	Discuss and demonstrate the principles of semiconductor diode.
C202.3	Build the mathematical model of transistors.
C202.4	Demonstrate the mathematical model of unipolar transistors.
C202.5	Describe the process of Integrated Circuit Fabrication.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C202.1	3	3	3	3	-	-	-	-	1	1	-	2	3	2
C202.2	3	3	3	3	1	1	1	1	1	1	-	2	3	2
C202.3	3	3	3	3	1	1	1	1	1	1	-	2	3	2
C202.4	3	3	3	3	1	1	1	1	1	1	-	2	3	2
C202.5	3	3	3	3	1	1	1	1	1	1	-	2	3	2
Average	**3**	**3**	**3**	**3**	**0.8**	**0.8**	**0.8**	**0.8**	**1**	**1**	**-**	**2**	**3**	**2**

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Course Name: Components for Electronic Circuit Design - C202(P) (III Sem)

After the completion of practical, the students will be able to:

CO	Statement
C202.1	Explain the basic concepts of semiconductor devices and their use of in different electronic circuits.
C202.2	Calculate different performance parameters of semiconductor devices.
C202.3	Plot and study the characteristics of transistors.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C202.1	2	2	2	3	2	1	-	1	3	3	2	3	3	3
C202.2	2	2	2	3	2	1	-	1	3	3	2	3	3	3
C202.3	2	2	2	3	2	1	-	1	3	3	2	3	3	3
Average	**2**	**2**	**2**	**3**	**2**	**1**	**-**	**1**	**3**	**3**	**2**	**3**	**3**	**3**

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Course Name: Digital System Design - C203 (III Sem)

After the completion of course, the students will be able to:

CO	Statement
C203.1	Demonstrate the knowledge of: Logic gates, Boolean algebra including algebraic manipulation / simplification and Application of DeMorgan's Theorem, Karnaugh map reduction method.
C203.2	Develop basic combinational circuits and verify their functionalities.
C203.3	Illustrate and apply the knowledge of different flip flops to build sequential digital circuits.
C203.4	Classify different logic families and their characteristics.
C203.5	Demonstrate and apply programming proficiency using the various addressing modes and instructions of the target microprocessor

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C202.1	3	3	3	3	1	1	1	-	1	1	-	2	3	2
C202.2	3	3	3	3	1	1	1	-	1	1	-	2	3	2
C202.3	3	3	3	3	1	1	1	-	1	1	-	2	3	2
C202.4	3	3	3	3	1	1	1	-	1	1	-	2	3	2
C202.5	3	3	3	3	1	1	1	-	1	1	-	2	3	2
Average	**3**	**3**	**3**	**3**	**1**	**1**	**1**	**-**	**1**	**1**	**-**	**2**	**3**	**2**

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Course Name: Digital System Design - C203 (III Sem)

After the completion of practical, the students will be able to:

CO	Statement
C203.1	Demonstrate the different Boolean Laws & basics of K-map to realize combinational & sequential circuits.
C203.2	Identify the various digital ICs & understand their operation.
C203.3	Describe the operation & timing constraints for latches, registers, different sequential circuits and Microprocessor.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C202.1	3	3	3	3	2	1	1	2	2	1	2	2	2	2
C202.2	3	3	3	3	2	1	1	2	2	1	2	2	2	2
C202.3	3	3	3	3	2	1	1	2	2	1	2	2	2	2
Average	**3**	**3**	**3**	**3**	**2**	**1**	**1**	**2**	**2**	**1**	**2**	**2**	**2**	**2**

Name and Sign of Subject Teacher

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Course Name: Network Theory - C204 (III Sem)

After the completion of course, the students will be able to:

CO	Statement
C204.1	Apply mesh and node voltage method to model and analyze electrical circuits.
C204.2	Apply network theorems for the analysis of networks.
C204.3	Illustrate the transient and steady-state response of electrical circuits.
C204.4	Aapply Laplace transforms to analyze networks and Synthesize waveforms
C204.5	Analyze two port network behaviour and Evaluate different Network Functions

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C204.1	3	3	3	3	-	1	1	1	-	2	-	2	3	1
C204.2	3	3	3	3	-	1	1	1	-	2	-	2	3	1
C204.3	3	3	3	3	-	1	1	1	-	2	-	2	3	1
C204.4	3	3	3	3	-	1	1	1	-	2	-	2	3	1
C204.5	3	3	3	3	-	1	1	1	-	2	-	2	3	1
Average	**3**	**3**	**3**	**3**	**-**	**1**	**1**	1	**-**	**2**	**-**	**2**	**3**	**1**

Name and Sign of Subject Teacher

Dr. Mrs. A. P. Rathkanthiwar
Head (ECE)

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Course Name: Signals and System - C205 (III Sem)

After the completion of Course, the students will be able to:

CO	Statement
C205.1	Classify different types of signals and systems.
C205.2	Illustrate the concept of Linear Time Invariant (LTI) system and its properties.
C205.3	Analyze continuous time periodic and aperiodic signals.
C205.4	Analyze continuous time systems using Laplace Transform.
C205.5	Analyze DT signals and systems in frequency domain using Fourier Transform.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C205.1	3	3	2	2	1	1	-	-	1	2	-	2	3	1
C205.2	3	3	2	2	1	1	-	-	1	2	-	2	3	1
C205.3	3	3	2	2	1	1	-	-	1	2	-	2	3	1
C205.4	3	3	2	2	1	1	-	-	1	2	-	2	3	1
C205.5	3	3	2	2	1	1	-	-	1	2	-	2	3	1
Average	**3**	**3**	**2**	**2**	**1**	**1**	**-**	**-**	**1**	**2**	**-**	**2**	**3**	**1**

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Course Name: Measurement & Instrumentation - C206 (III Sem)

After the completion of Course, the students will be able to:

CO	Statement
C206.1	Identify and use precise/accurate instrument for measurement of various electrical Parameters and to Understand its technical specifications.
C206.2	Identify and minimize errors in electrical/electronic measurement
C206.3	Classify and select suitable transducer for measurement of physical parameters.
C206.4	Analyze the data using statistical analysis.
C206.5	Explain modern trends in data acquisition systems

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C206.1	3	3	2	2	-	1	1	-	-	2	-	2	3	2
C206.2	3	3	3	2	-	1	1	-	-	2	-	2	3	2
C206.3	3	3	3	2	-	1	1	-	-	2	-	2	3	2
C206.4	3	3	3	3	-	1	1	-	-	2	-	2	3	2
C206.5	3	3	3	3	-	1	1	-	-	2	-	2	3	2
Average	**3**	**3**	**2.8**	**2.4**	**-**	**1**	**1**	**-**	**-**	**2**		**2**	**3**	**2**

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Course Name: Electronics Workshop-I- C207(P) (III Sem)

After the completion of practical, the students will be able to:

CO	Statement
C207.1	Explain Different Performance Parameters of Active and Passive Devices and the Datasheets.
C207.2	Use Semiconductor Devices in Different Electronic Circuits and Projects.
C207.3	Implement the project based on above components

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C206.1	3	3	3	3	3	1	-	-	3	3	2	3	3	3
C206.2	3	3	3	3	3	1	-	-	3	3	2	3	3	3
C206.3	3	3	3	3	3	1	-	-	3	3	2	3	3	3
Average	**3**	**3**	**3**	**3**	**3**	**1**	**-**	**-**	**3**	**3**	**2**	**3**	**3**	**3**

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(SEMESTER – IV)-CBCS

List of IV Semester Subjects with Subject Code

Course Code as per RTMNU	Course Code	Subject
BEETC-401T	C208	Microcontrollers & Applications
BEETC-401P	C208P	Microcontrollers & Applications Lab
BEETC-402T	C209	Analog & Digital Communications
BEETC-403P	C209P	Analog and Digital Electronics Lab
BEETC-404T	C210	Analog System Design
BEETC-405T	C211	Data structure & Algorithm
BEETC-406T	C212	Numerical Mathematics and Probability Using MATLAB
BEETC-407T	C213	Programming for problem solving
BEETC-407P	C213P	Programming for problem solving Lab
BEETC-408I	C214	Internship
BEETC-409A	C215	Universal human values

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Course Name: Microcontrollers and Application - C208 (IV Sem)

After the completion of course, the students will be able to:

CO	Statement
C208.1	Demonstrate the programming model of 8051 microcontroller.
C208.2	Design and implement 8051 microcontroller-based systems for various applications
C208.3	Illustrate programming model of AVR & programming in Integrated Development environment.
C208.4	Design and implement advanced processor/controllers like MSP-430 based systems for various applications.
C208.5	Design and develop Arduino based embedded system applications.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C208.1	3	3	3	2	2	1	-	-	-	1	-	2	3	2
C208.2	3	3	3	2	2	1	-	-	-	1	-	2	3	2
C208.3	3	3	3	2	2	1	-	-	-	1	-	2	3	2
C208.4	3	3	3	2	2	1	-	-	-	1	-	2	3	2
C208.5	3	3	3	2	2	1	-	-	-	1	-	2	3	2
Average	3	3	3	2	2	**1**	-	-	-	1		2	3	**2**

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Course Name: Microcontrollers and Application - C208(P) (IV Sem)

After the completion of practical, the students will be able to:

CO	Statement
C208.1	Demonstrate the concept of assembly languages and higher-level languages programming.
C208.2	Interface various peripherals with 8051, Atmega32 and msp430 and Arduino.
C208.3	Simulate the programs on different software platforms.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C208.1	2	2	2	3	3	1	-	-	3	3	2	3	3	3
C208.2	2	2	2	3	3	1	-	-	3	3	2	3	3	3
C208.3	2	2	2	3	3	1	-	-	3	3	2	3	3	3
Average	2	2	2	3	3	1	-	-	3	3	2	3	3	3

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Course Name: Analog and Digital Communication - C209 (IV Sem)

After the completion of course, the students will be able to:

CO	Statement
C209.1	Demonstrate a basic need of modulation and various types of amplitude and angle modulation techniques required for analog communication.
C209.2	Analyze various AM - FM receivers, along with the effect of noise on analog communication systems.
C209.3	Explain the designing of digital communication systems by applying knowledge of the various pulse modulation techniques.
C209.4	Describe various digital modulation techniques and various parameters associated with it.
C209.5	Identify different types of channel coding techniques and analyze the different spread spectrum methods.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C209.1	3	3	3	2	-	1	1	-	-	2	-	3	3	2
C209.2	3	3	3	2	-	1	1	-	-	2	-	3	3	2
C209.3	3	3	3	2	-	1	1	-	-	2	-	3	3	2
C209.4	3	3	3	2	-	1	1	-	-	2	-	3	3	2
C209.5	3	3	3	2	-	1	1	-	-	2	-	3	3	2
Average	3	3	3	2	-	1	1	-	-	2	-	3	3	2

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Course Name: Analog and Digital Electronics - C209(P) (IV Sem)

After the completion of practical, the students will be able to:

CO	Statement
C209.1	Explain the practical aspects of linear and non-linear applications of OP-AMP
C209.2	Design the various wave-shaping circuits, oscillators, signal conditioners and various application-based circuits using OP-AMP and Transistors
C209.3	Demonstrate and explain various concepts of analog and digital communication
C209.4	Develop an application-based project using industry-based OP--Amp.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C209.1	3	3	3	3	1	1	-	-	2	2	2	2	2	2
C209.2	3	3	3	3	1	1	-	-	2	2	2	2	2	2
C209.3	3	3	3	3	1	1	-	-	2	2	2	2	2	2
C209.4	3	3	3	3	1	1	-	-	2	2	2	2	2	2
Avearge	**3**	**3**	**3**	**3**	**1**	**1**	**-**	**-**	**2**	**2**	**2**	**2**	**2**	**2**

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Course Name: Analog System Design - C210 (IV Sem)

After the completion of course, the students will be able to:

CO	Statement
C210.1	Describe and explain the basic concepts of OPAMP.
C210.2	Demonstrate and analyze various linear applications of OPAMP.
C210.3	Demonstrate and analyze various non-linear applications of OPAMP.
C210.4	Illustrate DC Power Supply.
C210.5	Evaluate and design various types of oscillators and filters.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C210.1	3	3	3	3	1	-	-	-	1	2	-	2	3	2
C210.2	3	3	3	3	1	-	-	-	1	2	-	2	3	2
C210.3	3	3	3	3	1	-	-	-	1	2	-	2	3	2
C210.4	3	3	3	3	1	-	-	-	1	2	-	2	3	2
C210.5	3	3	3	3	1	-	-	-	1	2	-	2	3	2
Average	**3**	**3**	**3**	**3**	**1**	**-**	**-**	**-**	**1**	**2**	**-**	**2**	**3**	**2**

Name and Sign of Subject Teacher

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Course Name: Data Structure and Algorithm - C211 (IV Sem)

After the completion of course, the students will be able to:

CO	Statement
C211.1	Choose appropriate data structure based on the specified problem definition and analyze the algorithm.
C211.2	Describe and use operations like searching, insertion, deletion, traversing mechanism etc. on various data structures
C211.3	Apply concepts learned in various domains like Operating Systems, DBMS etc.
C211.4	Use linear and non-linear data structures like stacks, queues, linked list, trees etc.
C211.5	Use various advanced algorithm based on data structure.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C211.1	3	3	3	2	-	1	1	1	1	1	-	2	1	2
C211.2	3	3	3	2	-	1	1	1	1	1	-	2	1	2
C211.3	3	3	3	2	-	1	1	1	1	1	-	2	1	2
C211.4	3	3	3	2	-	1	1	1	1	1	-	2	1	2
C211.5	3	3	3	2	-	1	1	1	1	1	-	2	1	2
Average	3	3	3	2	-	1	1	1	1	1	-	2	1	2

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Course Name: Numerical Analysis with MATLAB - C212 (IV Sem)

After the completion of course, the students will be able to:

CO	Statement
C212.1	Apply MATLAB models to solve problems of Numerical Methods, Z-Transform and Probability.
C212.2	Apply Numerical Techniques to solve Algebraic equating and Transcendental Equation and use of MATLAB commands to solve it.
C212.3	Apply Numerical Techniques to solve first order first degree differential equations and use of MATLAB commands to solve it.
C212.4	Understand Z-Transform technique to solve differece equation which applied in signal system problems and use of MATLAB commands to solve it.
C212.5	Apply probability concept to discrete and continuous variables to solve scientific and engineering problems use of MATLAB commands to solve it.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C212.1	3	2	1	1	1	-	-	-	-	-	-	-	1	1
C212.2	1	2	2	1	1	-	-	-	-	-	-	-	2	2
C212.3	2	2	2	1	1	-	-	-	-	-	-	-	2	1
C212.4	1	1	1	1	2	-	-	-	-	-	-	-	2	2
C212.5	3	1	2	1	1	-	-	-	-	-	-	-	1	2
Average	2	1.6	1.6	1	1.2	-	-	-	-	-	-	-	1.6	1.6

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Course Name: Programming for Problem Solving - C213 (IV Sem)

After the completion of course, the students will be able to:

CO	Statement
C213.1	Explain the basic concepts of Object Oriented Programming and design simple java programs.
C213.2	Apply the knowledge of Inheritance in program development.
C213.3	Design programs using polymorphism and interfaces.
C213.4	Apply various exceptions using concepts of exception handling.
C213.5	Explain and implement concepts on file streams and operations in java programming for a given application programs.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C213.1	3	3	3	2	2	-	1	-	1	2	-	3	1	2
C213.2	3	3	3	2	2	-	1	-	1	2	-	3	1	2
C213.3	3	3	3	2	2	-	1	-	1	2	-	3	1	2
C213.4	3	3	3	2	2	-	1	-	1	2	-	3	1	2
C213.5	3	3	3	2	2	-	1	-	1	2	-	3	1	2
Average	**3**	**3**	**3**	2	2	-	**1**	-	1	2	-	**3**	1	2

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Course Name: Programming for Problem Solving - C213(P) (IV Sem)

After the completion of practical, the students will be able to:

CO	Statement
C213.1	Able to choose appropriate data structure based on the specified problem definition and analysis the algorithm
C213.2	Apply the knowledge of Inheritance in program development.
C213.3	Develop programs using polymorphism and interfaces.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C213.1	3	3	3	3	2	1	-	-	3	1	2	2	2	2
C213.2	3	3	3	3	2	1	-	-	3	1	2	2	2	2
C213.3	3	3	3	3	2	1	-	-	3	1	2	2	2	2
Average	**3**	**3**	**3**	**3**	**2**	**1**	**-**	**-**	**3**	**1**	**2**	**2**	**2**	**2**

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Course Name: Internship- C214 (IV Sem)

After the completion of course, the students will be able to:

CO	Statement
C213.1	Construct the compony profile by compiling brief history, management structure, products/ service offered, key achievements and market performance for his/her organization of internship.
C213.2	Assess its strength, weaknesses, opportunities and threats (SWOT)
C213.3	Determine the challenges and future potential for his/her internship organization in particular and sector in general

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C213.1	3	3	3	3	2	1	-	1	3	1	2	2	2	2
C213.2	3	3	3	3	2	1	-	1	3	1	2	2	2	2
C213.3	3	3	3	3	2	1	-	1	3	1	2	2	2	2
Average	**3**	**3**	**3**	**3**	**2**	**1**	**-**	**1**	**3**	**1**	**2**	**2**	**2**	**2**

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(SEMESTER – V)-CBS
List of V Semester Subjects with Subject Code

Course Code as per RTMNU	Couse Code	Subject
BEECE-501T	C301	Antenna & Wave Propagation
BEECE-502T	C302	Microprocessor & Microcontroller
BEECE-502P	C302P	Microprocessor & Microcontroller
BEECE-503T	C303	Analog Circuit & Design
BEECE-503P	C303P	Analog Circuit & Design
BEETC-504T	C304	Communication Electronics
BEETC-504P	C304P	Communication Electronics
BEETC-505T	C305	Industrial Electronics & Entrepreneurship Development

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Course Name: Antenna & Wave Propagation - C301 (V Sem)

After the completion of course, the students will be able to:

CO	Statement
C301.1	Describe transmission line characteristics.
C301.2	Calculate antenna parameters (radiation pattern, beam width, lobes, directivity, gain, impedance, efficiency, polarization)
C301.3	Analyze wire antennas (monopoles, dipoles, and loops).
C301.4	Analyze and design antenna arrays
C301.5	Describe the operation of broadband and travelling wave antennas
C301.6	Describe the operation of aperture and reflector antennas, and analyze and design Microstrip antennas.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C301.1	3	2	1	1	1	1	-	-	-	2	-	-	2	1
C301.2	3	3	2	2	2	2	-	-	-	2	-	-	3	3
C301.3	2	3	2	2	2	1	-	-	-	1	-	-	3	2
C301.4	2	3	3	3	2	2	-	-	-	2	-	-	3	3
C301.5	2	2	3	2	2	1	-	-	-	1	-	-	2	2
C301.6	3	3	3	3	3	2	-	-	-	2	-	-	3	3
Average	**2.50**	**2.67**	**2.33**	**2.17**	**2.00**	**1.50**				**1.67**			**2.67**	**2.33**

Name and Sign of Subject Teacher

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Department of Electronics & Communication Engineering

Course Name: Microprocessor & Microcontroller - C302 (V Sem)

After the completion of practical, the students will be able to:

CO	Statement
C302.1	Describe and explain internal organization of 8086/8088 microprocessor.
C302.2	To programme & Interface 8086 with Keyboard/ Display, Interrupt Controller, Programmable I/O and Programmable timer.
C302.3	Demonstrate the concept of Serial & parallel data communication.
C302.4	Describe the concept the DMA, Coprocessor configuration and its communication with 8086.
C302.5	Describe and explain internal organization of 8051 Microcontrollers, Working, addressing modes.
C302.6	Design interfacing of ADC/DAC/Stepper motor, Displays etc with 8051 Microocntroller.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C302.1	1	**1**	**1**	**1**	**1**	**-**	**-**	**-**	**-**	**1**	**-**	**2**	**3**	**2**
C302.2	1	**1**	**1**	**1**	**1**	**-**	**-**	**-**	**-**	**1**	**-**	**2**	**3**	**2**
C302.3	1	**1**	**1**	**1**	**1**	**-**	**-**	**-**	**-**	**1**	**-**	**2**	**3**	**2**
C302.4	1	**1**	**1**	**1**	**1**	**-**	**-**	**-**	**-**	**1**	**-**	**2**	**3**	**2**
C302.5	1	**1**	**1**	**1**	**1**	**-**	**-**	**-**	**-**	**1**	**-**	**2**	**3**	**2**
C302.6	1	**1**	**1**	**1**	**1**	**-**	**-**	**-**	**-**	**1**	**-**	**2**	**3**	**2**
Average	**1**	**1**	**1**	**1**	**1**	**-**	**-**	**-**	**-**	**1**	**-**	**2**	**3**	**2**

Name and Sign of Subject Teacher

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Course Name: Microprocessor & Microcontroller - C302 P (V Sem)

After the completion of practical, the students will be able to:

CO	Statement
C302.1	Explain the programming model of 8086/8088.
C302.2	Write simple assembly language program using 8086/8088 microprocessor and execute using simulation software.
C302.3	Describe programming model of 8051 microcontroller.
C302.4	Write simple and execute assembly level language programs based on 8051.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C302.1	1	**2**	**2**	**2**	**2**	**-**	**-**	**-**	**2**	**1**	**-**	**2**	**2**	**2**
C302.2	2	**2**	**2**	**2**	**2**	**-**	**-**	**-**	**2**	**1**	**-**	**2**	**2**	**2**
C302.3	1	**2**	**2**	**2**	**2**	**-**	**-**	**-**	**2**	**1**	**-**	**2**	**2**	**2**
C302.4	2	**2**	**2**	**2**	**2**	**-**	**-**	**-**	**2**	**1**	**-**	**2**	**2**	**2**
Average	**1.5**	**2**	**2**	**2**	**2**	**-**	**-**	**-**	**2**	**1**	**-**	**2**	**2**	**2**

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Course Name: Analog Circuit & Design - C303 (V Sem)

After the completion of course, the students will be able to:

CO	Statement
C303.1	Acquire the sound understanding of the fundamentals, operation and characteristics of the operational amplifier.
C303.2	Design linear OP-Amp circuits such as voltage follower, summing amplifier, scaling and averaging amplifier, instrumentation amplifier circuits for various practical applications.
C303.3	Design non-linear OP-Amp circuits such as Comparator IC such as LM 339, Schmitt trigger, multivibrator circuits for various practical applications using I555.
C303.4	Analyse and design regulated power supply.
C303.5	Design sinusoidal oscillator and function generator.
C303.6	Design Butterworth Active Filter and drivers of stepper motor and servo motor control circuit.

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

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Course Name: Analog Circuit & Design - C303(P) (V Sem)

After the completion of practical, the students will be able to:

CO	Statement
C303.1	Analyze and design of analog electronics circuits and system
C303.2	Design linear and nonlinear application of operational Amplifier
C303.3	Design Oscillator and demonstrate gain bandwidth and frequency response of basic amplifier

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C303.1	3	3	3	3	1	1	-	-	2	2	2	2	2	2
C303.2	3	3	3	3	1	1	-	-	2	2	2	2	2	2
C303.3	3	3	3	3	1	1	-	-	2	2	2	2	2	2
Average	**3**	**3**	**3**	**3**	**1**	**1**	**-**	**-**	**2**	**2**	**2**	**2**	**2**	**2**

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Course Name: Communication Electronics C304 (V Sem)

After the completion of course, the students will be able to:

CO	Statement
C304.1	Demonstrate a basic need of modulation and various types of amplitude modulation techniques required for analog communication.
C304.2	Demonstrate a basic need of modulation and various types of angle modulation techniques required for analog communication.
C3043	Analyze various types of noise and its effect of noise on analog communication systems.
C304.4	Analyze various AM - FM receivers in analog communication systems.
C304.5	Explain the designing of digital communication systems by applying knowledge of the various pulse modulation techniques.
C304.6	Describe various applications of Modulations in communication system

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C304.1	2	2	-	-	-	-	1	-	-	-	-	1	3	1
C304.2	2	2	-	-	-	-	-	-	-	-	-	-	3	1
C3043	2	2	-	-	-	-	-	-	-	-	-	-	3	1
C304.4	2	2	-	-	-	-	-	-	-	-	-	-	3	1
C304.5	3	3	-	-	-	-	-	-	-	-	-	1	3	1
C304.6	3	3	-	-	-	-	-	-	-	-	-	-	3	1
Average	**2.33**	**2.33**	-	-	-	-	**0.1**	-	-	-	-	**0.33**	**3**	**1**

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Course Name: Communication Electronics C304-P (V Sem)

After the completion of course, the students will be able to:

CO	Statement
C304.1	Demonstrate different modulation techniques used in electronic communication system..
C304.2	Use the modulation techniques and modern communication tools necessary for various engineering applications
C304.3	Evaluate fundamental communication system parameters, such as bandwidth power, signal to quantization noise ratio, data rate etc

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C304.1	3	3	3	3	1	1	-	-	2	2	2	2	2	2
C304.2	3	3	3	3	1	1	-	-	2	2	2	2	2	2
C3043	3	3	3	3	1	1	-	-	2	2	2	2	2	2
Average	**3**	**3**	**3**	**3**	**1**	**1**	**-**	**-**	**2**	**2**	**2**	**2**	**2**	**2**

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Name and Sign of Subject Teacher **Head (ECE)**

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Course Name: Industrial Electronics & Entrepreneurship Development - C305 (V Sem)

After the completion of course, the students will be able to:

CO	Statement
C305.1	Explain different types of business structure.
C305.2	Acquire the knowledge of different market structures and New economic policy.
C305.3	Grasp the functions of banks, taxations system and implications of Inflation
C305.4	Identify various sources of finance
C305.5	Analyze the problems of Small Scall Industries and government's policies for them.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C305.1	-	-	-	-	-	-	-	1		-	2	2	-	-
C305.2	-	-	-	-	-	-	-	1	1	-	2	2	-	-
C305.3	-	-	-	-	-	-	-	1		-	2	2	-	-
C305.4	-	-	-	-	-	-	-	1	1	-	2	2	-	-
C305.5	-	-	-	-	-	-	-	1	1	-	3	2	-	-
Average	-	-	-	-	-	-	-	**1**	**0.3**	-	**2.2**	**2**	-	-

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(SEMESTER – VI)-CBS
List of VI Semester Subjects with Subject Code

Course Code as per RTMNU	Course Code	Subject
BEETC-601T	C306	Telecommunication Switching System
BEETC-602T	C307	Digital Signal Processing
BEETC-602P	C307P	Digital Signal Processing
BEETC-603T	C308	Control System Engg.
BEETC-604T	C309	Digital Communication
BEETC-604P	C309P	Digital Communication
BEETC-605T	C310	Functional English
BEETC-606P	C311P	Electronics Workshop Practice

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Course Name: Telecommunication Switching System - C306 (VI Sem)

After the completion of course, the students will be able to:

CO	Statement
C306.1	Describe the need for switching systems and their evolution from analogue to digital.
C306.2	Describe Telecommunication Traffic and its measurement.
C306.3	Explain various switching networks
C306.4	Describe Network Synchronization and Management
C306.5	Describe the Public Switched Telephone Network, private networks and integrated networks
C306.6	Describe and explain wireless mobile communication concepts

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C306.1	1	1	-	-	-	-	-	-	-	1	-	1	1	1
C306.2	1	1	-	-	-	-	-	-	-	1	-	1	2	1
C306.3	1	1	-	-	-	-	-	-	-	1	-	1	2	1
C306.4	1	1	-	-	-	-	-	-	-	1	-	1	2	1
C306.5	1	1	-	-	-	-	-	-	-	1	-	1	2	1
C306.6	**2**	**2**	**1**	-	-	**1**	-	-	-	**1**	-	**1**	**3**	**1**
Average	**1.16**	**1.16**	**0.16**	-	-	**0.16**	-	-	-	**1**	-	**1**	**2**	**1**

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Course Name: Digital Signal Processing - C307 (VI Sem)

After the completion of course, the students will be able to:

CO	Statement
C307.1	Describe Sampling, reconstruction Process, representation of discrete time signals and analysis of discrete time systems.
C307.2	Describe the Z-transforms for analysis of signals and systems.
C307.3	Describe the Discrete Fourier Transforms for analysis of signals and systems.
C307.4	Design and implementation of IIR digital filter for various applications .
C307.5	Design and implementation of FIR digital filter for various applications .
C307.6	Describe the concept of Multi rate signal processing and how to apply it for the wavelet transform.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C307.1	3	3	2	2	-	1	-	-	-	1	-	2	3	2
C307.2	3	3	3	2	-	1	-	-	-	1	-	2	3	3
C307.3	3	3	3	2	-	1	-	-	-	1	-	2	3	3
C307.4	3	3	3	3	-	1	-	-	-	1	-	2	3	3
C307.5	3	3	3	3	-	1	-	-	-	1	-	2	3	3
C307.6	3	3	3	2	-	1	-	-	-	1	-	2	3	3
Average	**3**	**3**	**2.8**	**2.6**	**-**	**1**	**-**	**-**	**-**	**1**	**-**	**2**	**3**	**2.8**

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Course Name: Digital Signal Processing - C307P (VI Sem)

After the completion of course, the students will be able to:

CO	Statement
C307.1	Analyze different properties of discrete Time Fourier transform.
C307.2	Analyze and process the signals in the discrete domain.
C307.3	Design and analyze the filters using simulation tools (MATLAB).

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C307.1	3	3	3	3	2	1	-	-	3	1	1	2	2	2
C307.2	3	3	3	3	2	1	-	-	3	1	1	2	2	2
C307.3	3	3	3	3	2	1	-	-	3	1	1	2	2	2
Average	**3**	**3**	**3**	**3**	**2**	**1**	**-**	**-**	**3**	**1**	**1**	**2**	**2**	**2**

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Course Name: Control System Engineering - C308 (VI Sem)

After the completion of course, the students will be able to:

Course Code	Statement
C308.1	Analyse various control systems.
C308.2	Represent the mathematical model of a system.
C308.3	Determine the response of different order systems for various step inputs
C308.4	Analyse the stability of the system using Root locus. Bode plot, Nyquist plot.
C308.5	Appraise transfer function of systems using signal flow graph.
C308.6	Apply the state variable approach in design.

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

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Course Name: Digital Communication - C309 (VI Sem)

After the completion of course, the students will be able to:

	Statement
C309.1	Elaborate the working principles of basic building blocks of a digital communication system and acquire the knowledge of signal space concept.
C309.2	Demonstrate the concept of coding techniques.
C309.3	Describe different digital modulation techniques.
C309.4	Model digital communication systems using appropriate mathematical techniques using Galois field and error control coding and receiver techniques for detection of a signal in AWGN channel.
C309.5	Describe a random process in terms of its mean and correlation functions and characterize special Gaussian and Rayleigh distributions.
C309.6	Explain the basic concept, describe spread spectrum analysis with generation of PN sequence and its types with applications.

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

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Course Name: - Digital Communication - C309P (VI Sem)

After the completion of practical, the students will be able to:

CO	Statement
C309.1	Describe the concept of the digital communication-based design for testing and analyze the circuits.
C309.2	Design and conduct experiments for testing digital communication circuits and systems.
C309.3	Analyze the different coding technique for design and modeling of digital communication Identify, formulate and solve digital communication circuits and systems problems.

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

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Course Name: Functional English- C310 (VI Sem)

After the completion of course, the students will be able to:

CO	Statement
C310.1	Acquire knowledge of structure of language.
C310.2	Be able to face competitive exams and the interview process and can become employable
C310.3	Develop business writing skills.
C310.4	Become familiar with technology enabled communication and can develop technical and scientific writing skills.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C310.1	-	-	-	-	-	-	-	-	-	3	-	2	-	-
C310.2	-	-	-	-	-	-	-	-	-	3	-	2	-	-
C310.3	-	-	-	-	-	-	-	-	-	3	-	2	-	-
C310.4	-	-	-	-	-	-	-	1	-	3	-	2	-	-
Average	-	-	-	-	-	-	-	**1**	-	**3**	-	**2**	-	-

Name and Sign of Subject Teacher

Dr. Mrs. A. P. Rathkanthiwar
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Course Name: Electronics Workshop Practice C311P (VI Sem)

After the completion of course, the students will be able to:

CO	Statement
C311.1	Explain Different Performance Parameters of Active and Passive Devices and the Datasheets.
C311.2	Use Semiconductor Devices in Different Electronic Circuits and Projects.
C311.3	Implement the project based on above components

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C311.1	3	3	3	3	3	1	-	-	3	3	2	3	3	3
C311.2	3	3	3	3	3	1	-	-	3	3	2	3	3	3
C311.3	3	3	3	3	3	1	-	-	3	3	2	3	3	3
Average	**3**	**3**	**3**	**3**	**3**	**1**	**-**	**-**	**3**	**3**	**2**	**3**	**3**	**3**

Name and Sign of Subject Teacher

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(Semester VII)-CBS

List of VII Semester Subjects with Subject Code

Course Code as per RTMNU	Course Code	Subject
BEECE-701	C401	DSP Processor & Architecture
BEECE-702	C402	Television & Video Engineering
BEECE-703	C403	Optical Communication
BEECE-704	C404	Advance Digital System Design
BEECE-705	C405	Elective-I
BEECE-706	C406	Project

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Course Name: -DSP Processor & Architecture - C401 (VII Sem)

After the completion of course, the students will be able to:

CO	Statement
C401.1	Explain the Fundamentals of PDSPs
C401.2	Describe the detailed architecture, addressing mode, instruction sets of TMS320C5X
C401.3	Execute program of DSP processor
C401.4	Describe the detailed architecture, addressing mode, instruction sets of TMS320C54XX
C401.5	Design & implement DSP algorithm using code composer studio
C401.6	Describe the detail architecture of Motorola 563xx.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C401.1	3	3	3	3	1	1	1	-	1	2	-	2	3	2
C401.2	3	3	3	3	1	1	1	-	1	2	-	2	3	2
C401.3	3	3	3	3	1	1	1	-	1	2	-	2	3	2
C401.4	3	3	3	3	1	1	1	-	1	2	-	2	3	2
C401.5	3	3	3	3	1	1	1	-	1	2	-	2	3	2
C401.6	3	3	**3**	**3**	1	1	1	-	1	2	-	2	**3**	2
Average	**3**	**3**	**3**	**3**	**1**	**1**	**1**	**-**	**1**	**2**	**-**	**2**	**3**	**2**

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Course Name: DSP Processor & Architecture - C401(P) (VII Sem)

After the completion of course, the students will be able to:

CO	Statement
C401.1	Analyze different properties of discrete Time Fourier transform.
C401.2	Analyze and process the signals in the discrete domain.
C401.3	Design and analyze the filters using simulation tools (MATLAB).

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C401.1	3	3	3	3	2	1	-	-	3	1	1	2	2	2
C401.2	3	3	3	3	2	1	-	-	3	1	1	2	2	2
C401.3	3	3	3	3	2	1	-	-	3	1	1	2	2	2
Average	**3**	**3**	**3**	**3**	**2**	**1**	**-**	**-**	**3**	**1**	**1**	**2**	**2**	**2**

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Course Name: Television Engineering - C402 (VII Sem)

After the completion of course, the students will be able to:

CO	Statement
C402.1	Demonstrate the concept of Television and Video Engg and study different Parameters for Broadcasting station
C402.2	Analyze and Synthesis of Different video signal parameters for Television transmission and reception.
C402.3	Demonstrate of Different Television Technologies in India and Analysis of performance parameters
C402.4	Compare different Digital Technologies and analysis of Working parameters
C402.5	Estimate different parameters of Colour composite video Signal
C402.6	Demonstrate digital television technology

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

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Course Name: Television Engineering - C402 (VII Sem)

After the completion of course, the students will be able to:

CO	Statement
C402.1	Classify different Television system.
C402.2	Categories VIF SIF section, video/ chroma section and RGB section
C402.3	Explain power supply section.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C402.1	3	3	3	3	2	1	-	-	3	1	1	2	2	2
C402.2	3	3	3	3	2	1	-	-	3	1	1	2	2	2
C402.3	3	3	3	3	2	1	-	-	3	1	1	2	2	2
Average	**3**	**3**	**3**	**3**	**2**	**1**	**-**	**-**	**3**	**1**	**1**	**2**	**2**	**2**

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Course Name: Optical Communication - C403 (VII Sem)

After the completion of course, the students will be able to:

	CO	Statement
C403.1	**CO1**	Define fundamental blocks of optical fiber.
C403.2	**CO2**	Define Transmission Characteristics of Optical fiber
C403.3	**CO3**	Analyze various types of losses and signal degradation factors, explain splices and connectors.
C403.4	**CO4**	Identiify various optical source materials and classify optical detectors.
C403.5	**CO5**	Compare performance parameters for Analog and Digital optical Links.
C403.6	**CO6**	Use of WDM, Optical Amplifiers and Networks for real

Course Code	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C403.1	**CO1**	3	3	2	2	-	1	-	-	-	1	-	2	3	2
C403.2	**CO2**	3	3	2	2	-	1	-	-	-	1	-	2	3	3
C403.3	**CO3**	3	3	2	2	-	1	-	-	-	1	-	2	3	3
C403.4	**CO4**	3	3	2	2	-	1	-	-	-	1	-	2	3	3
C403.5	**CO5**	3	3	2	2	-	1	-	-	-	1	-	2	3	2
C403.6	**CO6**	3	3	2	2	-	1	-	-	-	1	-	2	3	**2**
Average		3	3	2	2	-	1	-	-	-	1	-	2	3	**2.6**

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Course Name: ADSD- C404 (VII Sem)

After the completion of course, the students will be able to:

CO	Statement
C404.1	Design simple digital circuits using VHDL
C404.2	Design Ccombinational circuits
C404.3	Design Ssequential circuits
C404.4	Develop skilled VLSI front end designers
C404.5	Implement digital system design
C404.6	Experiment on Hardware /Software co-design.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C404.1	3	3	3	2	2	1	1	-	-	2	-	2	1	2
C404.2	3	3	3	2	2	1	1	-	-	2	-	2	1	2
C404.3	3	3	3	2	2	1	1	-	-	2	-	3	1	2
C404.4	3	3	3	2	2	1	1	-	-	2	-	2	1	2
C404.5	3	3	3	2	2	1	1	-	-	2	-	2	1	2
C404.6	3	3	3	2	2	1	1	-	-	2	-	2	1	2

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Course Name: ADSD- C404(P) (VII Sem)

After the completion of course, the students will be able to:

CO	Statement
C404.1	Develop simple digital circuits using VHDL
C404.2	Design Ccombinational circuits using VHDL
C404.3	Design Ssequential circuits using VHDL

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C404.1	2	2	1	1	2	-	-	-	1	1	1	2	2	2
C404.2	2	2	1	1	2	-	-	-	1	1	1	2	2	2
C404.3	2	2	1	1	2	-	-	-	1	1	1	2	2	2
Avearge	2	2	1	1	2	-	-	-	1	1	**1**	2	2	2

Name and Sign of Subject Teacher

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Course Name: PEC-I -DCE- C405 (VII Sem)

After the completion of course, the students will be able to:

CO	Statement
C405.1	Determine various text compression techniques.
C405.2	Demonstrate various audio compression techniques.
C405.3	Illustrate various image and video compression techniques
C405.4	Apply encryption techniques to digital communication
C405.5	Identify and analyze the principles of Public Key Encryption.
C405.6	Discribe various authentication and System Security using digital communication.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C405.1	3	3	2	2	-	1	-	-	-	2	-	2	3	1
C405.2	3	3	3	2	-	1	-	-	-	2	-	2	3	1
C405.3	3	3	3	2	-	1	-	-	-	2	-	2	3	1
C405.4	3	3	3	2	-	1	-	-	-	2	-	2	3	1
C405.5	3	3	3	2	-	1	-	-	-	2	-	2	3	1
C405.6	3	3	3	2	-	1	-	-	-	2	-	2	3	1
Average	3	3	2.4	2	-	1	-	-	-	2	-	2	3	1

Name and Sign of Subject Teacher

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(Semester VIII)-CBS

List of VIII Semester Subjects with Subject Code

Course Code as per RTMNU	Course Code	Subject
BEECE-801	C407	Microwave & Radar Engineering
BEECE-802	C408	Computer Communication Network
BEECE-803	C409	Wireless & Mobile Communication
BEECE-804	C410	Elective-I
BEECE-805	C411	Elective-II
BEECE-806	C412	Project

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Course Name: Microwave & Radar Engineering - C407 (VII Sem)

After the completion of course, the students will be able to:

CO	Statement
C407.1	Identify the different types of active and passive microwave components & devices used in Microwave Test Bench.
C407.2	Compare Different Microwave generators and explain it with the help of scattering parameter
C407.3	Explain the use of Different Microwave solid state device and estimate the performance parameters
C407.4	Demonstratete Microwave Power measurement in microwave Test Bench and Analysis of different power measurement techniques
C407.5	Identify and formulate the problems and find Radar engineering solutions based on a system approach
C407.6	Demonstrate different radar and its display technology

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

Name and Sign of Subject Teacher

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Course Name: Microwave & Radar Engineering- C407(P) (VII Sem)

After the completion of course, the students will be able to:

CO	Statement
C407.1	Identify the different types of active and passive microwave components & devices used in Microwave Test Bench
C407.2	Estimate the performance parameters different Microwave generators and solid state device
C407.3	Demonstration of Microwave Power measurement in microwave Test Bench and estimate different power measurement parameters

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C407.1	3	3	3	3	1	-	-	-	-	2	1	2	3	1
C407.2	3	3	3	3	1	-	-	-	-	2	1	2	3	1
C407.3	3	3	3	3	1	-	-	-	-	2	1	2	3	1
Avrage	**3**	**3**	**3**	**3**	**1**	**-**	**-**	**-**	**-**	**2**	**1**	**2**	**3**	**1**

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Course Name: Computer Communication Network- C408 (VII Sem)

After the completion of course, the students will be able to:

CO	Statement
C408.1	Describe the basics of Computer Network, Data Communication, Network topologies, transmission media and switching techniques.
C408.2	Explain the services and features of various protocols of Data Link Layer and MAC sub-layer.
C408.3	Use the concept of IP Addressing techniques and its various protocols of Network Layer.
C408.4	Describe the transport layer, Application Layer services and its protocol Headers and analyze the congestion control protocols.
C408.5	Explain the function of Application Layer and Presentation layer paradigm and protocols.
C408.6	Describe the concept of computer network security.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C408.1	3	3	3	3	-	1	1	-	1	2	1	2	2	2
C408.2	3	3	3	3	-	1	1	-	1	2	1	2	2	2
C408.3	3	3	3	3	-	1	1	-	1	2	1	2	2	2
C408.4	3	3	3	3	-	1	1	-	1	2	1	2	2	2
C408.5	3	3	3	3	-	1	1	-	1	2	1	2	2	2
C408.6	3	3	3	3	-	1	1	-	1	2	1	2	2	2
Average	**3**	**3**	**3**	**3**	**-**	**1**	**1**	**-**	**1**	**2**	**1**	**2**	**2**	**2**

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Course Name: Computer Communication Network- C408(P) (VII Sem)

After the completion of course, the students will be able to:

CO	Statement
C408.1	Analyse various computer hardware component
C408.2	Apply NS-2 Software tool for network simulation.
C408.3	Analyse different communication protocols in CCN Network.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C408.1	3	3	3	3	3	1	1	-	-	1	-	2	2	2
C408.2	3	3	3	3	3	1	1	-	-	1	-	2	2	2
C408.3	3	3	3	3	3	2	1	-	-	1	-	2	2	2
Average	**3**	**3**	**3**	**3**	**3**	**1**	**1**	**-**	**-**	**1**	**-**	**2**	**2**	**2**

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Course Name: Wireless Mobile Communication- C409 (VII Sem)

After the completion of course, the students will be able to:

CO	Statement
C409.1	Design a model of cellular Communication system and analyse their operation and performance.
C409.2	Quantify the causes and effects of path loss and signal fading on received signal characteristics.
C409.3	Apply and analyse the fundamental techniques of Diversity and Channel Coding
C409.4	construct and analyze the GSM system, use the IRS technology to increase the range and quality of GSM signal.
C409.5	Classify the difference between Wireless and Fixed Telephone Networks, Mobile IP and wireless access protocol
C409.6	Describe the different types of Wireless LAN Technology and Wireless Application Protocol.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C409.1	3	3	2	2	-	1	-	-	-	1	-	2	3	1
C409.2	3	3	3	2	-	1	-	-	-	1	-	2	3	1
C409.3	3	3	3	2	-	1	-	-	-	1	-	2	3	1
C409.4	3	3	3	3	-	1	-	-	-	1	-	2	3	1
C409.5	3	3	3	3	-	1	-	-	-	1	-	2	3	1
C409.6	3	3	3	3	-	1	-	-	-	1	-	2	3	1
Avearge	3	3	2.8	2.4	-	1	-	-	-	1	-	2	3	1

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Course Name: PEC-II-Digital Image Processing- C410 (VII Sem)

After the completion of course, the students will be able to:

CO	Statement
C410.1	Describe the fundamentals of Digital Image Processing
C410.2	Use the various spatial and frequency domain techniques for image enhancement and explain various color image models
C410.3	Apply various image transforms to the image
C410.4	Explain image coding fundamentals and basic compression methods
C410.5	Describe and analyze image segmentation, presentation & description process
C410.6	Explain the image degradation model & noise model for image restoration & reconstruction

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C410.1	3	1	-	1	-	-	-	-	-	1	-	2	3	2
C410.2	3	3	3	3	1	-	-	-	-	1	-	2	3	2
C410.3	3	3	3	3	1	-	-	-	-	1	-	2	3	2
C410.4	3	3	3	3	1	-	-	-	-	1	-	2	3	2
C410.5	3	3	3	3	1	-	-	-	-	1	-	2	3	2
C410.6	3	3	3	3	1	-	-	-	-	1	-	2	3	2
Average	3	2.8	2.4	2.8	0.83	-	-	-	-	1	-	2	3	2

Name and Sign of Subject Teacher

Dr. Mrs. A. P. Rathkanthiwar
Head (ECE)

PRIYADARSHINI COLLEGE OF ENGINEERING

(Recognised by A.I.C.T.E., New Delhi & Govt. of Maharashtra, Affiliated to R.T.M.Nagpur University)
Near CRPF Campus, Hingna Road, Nagpur-440 019, Maharashtra (India)
Phone : 07104 – 236381, 237307, Fax : 07104 – 237681,
Department of Electronics & Communication Engineering

Course Name: PEC-II-SAT COM- C411 (VII Sem)

After the completion of course, the students will be able to:

CO	Statement
C411.1	Identify orbital aspects and components of a satellite communication system
C411.2	Examine research with capabilities in the analysis of satellite link budget system
C411.3	Identify different multiple communication system
C411.4	Identify the atmospheric effects on satellite communication
C411.5	Use various error control codes for communication
C411.6	Implement technical competence in specialized areas of Satellite Communication engineering.

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

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Department of Electronics & Communication Engineering

Course Name: Project -C412-(VIII Sem)

CO	Statement
C412.1	Identify, analyze and design engineering solutions to complex problems utilizing a systems approach
C412.2	Demonstrate the knowledge, skills and attitudes of a professional engineer.
C412.3	Work in a team and communicate with peers.
C412.4	Show correct attitude towards achieving the goals and objectives
C412.5	Address societal issues related to environment, sustainability, ethics and safety.
C412.6	Use modern tools in the field of Electronics and Communication Engineering

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C412.1	3	3	3	3	3	-	2	-	-	1	-	2	3	2
C412.2	3	3	2	3	1	2	-	2	2	3	1	2	1	1
C412.3	-	-	-	-	-	2	2	2	3	1	2	2	3	3
C412.4	1	1	1	1	2	2	1	2	3	3	2	-	2	2
C412.5	1	1	1	1	-	3	3	3	-	1	-	2	3	3
C412.6	3	3	3	3	-	1	-	-	-	1	-	2	3	3
Average	**1.8**	**1.8**	**1.6**	**1.8**	**1**	**1.6**	**1.33**	**1.5**	**1.3**	**1.6**	**0.8**	**1.6**	**2.5**	**2.3**

Name and Sign of Subject Teacher

Dr. Mrs. A. P. Rathkanthiwar
Head (ECE)