LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
Accredited by NAAC & NBA (CSE, IT, ECE, EEE & ME)
Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada
L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

DEPARTMENT OF ELECTRONICS & COMMUNICATIONS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr.M.Sambasiva Reddy/Dr.T.Satyanarayana
Course Name & Code : AECEL/C
Program/Sem/Sec : B.Tech., ECE., VI-Sem, A Sec A.Y : 2021-22

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered	Roll.No. of Participants	Tentative Date of Completion	Actual Date of Completion	HOD Sign Weekly
1.	IEEE Spectrum Magazine-Any Topic from Latest Editions (Presentation/Group Discussion)	18761A0462, 19761A401 to 19761A0405	25-02-2022		
2.	Smart India Hakathon /Ideation (Presentation/Group Discussion)	19761A0406 to 19761A0410	04-03-2022		
3.	Current Affairs/Technical Talks	19761A0411 to 19761A0415	11-03-2022		
4.	Technical Quiz	19761A0416 to 19761A0420	25-03-2022		
5.	Debate on Latest Technologies	19761A0421 to 19761A0425	01-04-2022		
6.	IEEE Spectrum Magazine-Any Topic from Latest Editions (Presentation/Group Discussion)	19761A0426 to 19761A0430	08-04-2022		
7.	Smart India Hakathon /Ideation (Presentation/Group Discussion)	19761A0431 to 19761A0435	22-04-2022		
8.	Current Affairs/Technical Talks	19761A0436 to 19761A0440, 20765A0401	29-04-2022		
9.	Technical Quiz	19761A0441 to 19761A0445, 20765A0402	06-05-2022		
10.	Debate on Latest Technologies	19761A0446 to 19761A0450, 20765A0403	13-05-2022		
11.	IEEE Spectrum Magazine-Any Topic from Latest Editions (Presentation/Group Discussion)	19761A0451 to 19761A0455, 20765A0404	20-05-2022		
12.	Smart India Hakathon /Ideation (Presentation/Group Discussion)	19761A0456 to 19761A0460, 20765A0405	27-05-2022		
13.	Current Affairs/Technical Talks	19761A0461 to 19761A0464, 20765A0406	03-06-2022		

Course Instructor
(M.Sambasiva Reddy)

HOD
(Dr.Y.Amar Babu)

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr V.Ravi Sekhara Reddy
Course Name & Code : Antennas and Wave Propagation &17EC21
L-T-P Structure : 2-2-0 Credits: 3
Program/Sem/Sec : B.Tech., ECE., VI-Sem., Sections- A A.Y :2021-22

Pre-Requisites: EM Fields and Waves, Transmission Lines and Waveguides

Course Objectives: This course provides the knowledge on Antennas and Radiation fundamentals. The course will expose different types of Antennas and their applications. The course also gives the complete information regarding Propagation of Radio wave in atmosphere.

Course Outcomes (COs): At the end of the course, students are able to

CO1	**Understand** radiation mechanism, antenna properties, ground, space, and sky wave propagations
CO2	**Analyze** wire antenna, ground, space, and sky wave propagation mechanism for communication purpose and synthesize various Antenna Arrays
CO3	**Design** HF, VHF and UHF Antennas
CO4	**Evaluate** and measure antenna parameters radiation pattern, Gain, Impedance, Radiation resistance and Aperture efficiency

Course Articulation Matrix (Correlation between COs &POs, PSOs):

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	1	2	-	-	-	-	-	-	-	-	-	1	1	-	-
CO2	2	3	1	-	-	-	-	-	-	-	-	3	2	-	-
CO3	3	2	3	-	-	-	-	-	-	-	-	2	3	-	-
CO4	3	2	3	-	-	-	-	-	-	-	-	1	2	-	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1-Slight(Low), **2**-Moderate(Medium), **3**-Substantial (High).

TEXT BOOK(S):

T1 Constantine A. Balanis, "Antenna Theory: Analysis and Design", John Wiley & sons Publishers,2nd Edition

T2 K.D. Prasad, Antennas and Wave Propagation, Satya Prakashan Publishers, New Delhi.

REFERENCE BOOK(S):

R1 G.S.N Raju, "Antennas and Wave Propagation", Pearson Education Publishers.

R2 Jordan and Balmain, Electromagnetic fields and Radiating systems, Pearson Education. Publishers.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

UNIT-I: Radiation and Antenna fundamentals:

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Course and COs	1	23.02.2022		TLM1	
2.	Introduction to Unit-I	1	24.02.2022		TLM1	
3.	Radiation mechanism	1	25.02.2022		TLM1	
4.	Antenna parameters-radiation pattern	1	26.02.2022		TLM2	
5.	Radiation intensity, directivity, gain, Radiation efficiency,	1	02.03.2022		TLM1	
6.	Beam width, beam area, Effective aperture, effective length	1	03.03.2022		TLM1	
7.	Network theorems-antennas	1	05.03.2022		TLM1	
8.	Potential functions-heuristic approach, Maxwells Equation approach	1	09.03.2022		TLM1	
9.	Potential functions for sinusoidal oscillations, Alternating current element-Analysis	1	10.03.2022		TLM1	
10.	Half wave dipole and quarter wave mono pole antennas-Analysis	1	11.03.2022		TLM2	
11.	Radiation from quarter wave mono pole and Half wave dipole antennas	1	16.03.2022		TLM2	
12.	Radiation resistance of quarter wave mono pole and Half wave dipole antennas	1	17.03.2022		TLM1	
13.	**Tutorial-1**	1	04.03.2022		TLM3	
14.	**Tutorial-2**	1	19.03.2022		TLM3	
No. of classes required to complete UNIT-I : 14			No. of classes taken :			

UNIT-II: Antennas Array Analysis:

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
15.	Antenna arrays-types	1	23.04.2022		TLM1	
16.	Array of two-point sources	1	24.03.2022		TLM1	
17.	Broad side array	1	25.03.2022		TLM1	
18.	N element Broad side array	1	26.03.2022		TLM1	
19.	End fire array	1	31.03.2022		TLM1 TLM1	
20.	Binomial array, pattern multiplication	1	01.04.2022		TLM1	
21.	Synthesis methods- Chebyshev Method.	1	06.04.2022		TLM1	
22.	Schelnuoff Polynomial Method	1	07.04.2022		TLM1	
23.	Fourier Transform Method, Woodward-Lawson Method	1	08.04.2022		TLM2	
24.	**Tutorial-3**	1	30.03.2022		TLM3	
25.	**Tutorial-4**	1	09.04.2022		TLM3	
No. of classes required to complete UNIT-II		**11**	No. of classes taken:			

UNIT-III: HF, VHF and UHF Antennas:

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
26.	Resonant vs Non resonant antennas	1	20.05.2022		TLM1	
27.	V, Inverted V antennas	1	21.05.2022		TLM1	
28.	Rhombic antenna	1	22.05.2022		TLM1	
29.	Folded dipole antenna	1	23.05.2022		TLM1	
30.	Yagi Uda antenna Log periodic antenna	1	28.05.2022		TLM1	
31.	Helical antenna	1	31.05.2022		TLM1	
32.	Loop antenna	1	01.06.2022		TLM1	
33.	**Tutorial-5**	1	27.04.2022		TLM3	
34.	**Tutorial-6**	1	04.05.2022		TLM3	
No. of classes required to complete UNIT-III : 09				No. of classes taken:		

UNIT-IV: Microwave Antennas & Antenna Measurements:

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
35.	Corner Reflector antennas	1	05.05.2022		TLM1	
36.	Parabolic reflector antenna	1	06.05.2022		TLM1	
37.	Horn antenna	1	07.05.2022		TLM2	
38.	Lens antenna	1	12.05.2022		TLM1	
39.	Measurement of gain, Measurement of directional pattern	1	13.06.2022		TLM1	
40.	Measurement of impedance, beam width	1	14.06.2022		TLM1	
41.	Measurement of radiation resistance, effective aperture, aperture efficiency, directivity	1	18.06.2022		TLM1	
42.	**Tutorial- 7**	1	11.05.2022		TLM3	
43.	**Tutorial-8**	1	19.05.2022		TLM3	
No. of classes required to complete UNIT-IV: 09			No. of classes taken:			

UNIT-V: Wave Propagation:

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
44.	Ground wave propagation	1	20.05.2022		TLM1	
45.	Sky wave propagation-mechanism	1	21.05.2022		TLM1 TLM1	
46.	Layers of Ionosphere	1	25.05.2022		TLM1	
47.	Critical frequency, MUF, OWF, LUHF	1	27.06.2022		TLM1	
48.	Skip distance, virtual height, ionosphere abnormalities	1	28.05.2022		TLM1	
49.	Space wave propagation	1	01.06.2022		TLM1	

50.	Field strength, LOS Duct propagation	1	25.06.2022		TLM1	
51.	**Tutorial-9**	1	26.05.2022		TLM3	
52.	**Tutorial-10**	1	03.06.2022		TLM3	
No. of classes required to complete UNIT-V :09			No. of classes taken			

Contents beyond the Syllabus

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Design of microstrip patch Antennas	1	03.06.2022		TLM2	

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS:

Evaluation Task	Marks
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
I-Mid Examination (Units-I & II)	M1=20
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=20
II-Quiz Examination (Units-III, IV & V)	Q2=10
Mid Marks =75% of Max(M1,M2) + 25% of Min(M1,M2)	M=20
Quiz Marks =75% of Max(Q1,Q2) + 25% of Min(Q1,Q2)	Q=10
Assignment Marks = Average of Best Four of A1, A2, A3, A4, A5	A=5
Attendance	B=5
Cumulative Internal Examination (CIE) : M+Q+A+B	40
Semester End Examination (SEE)	60
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1: **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO 2: **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO 3: **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO 4: **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5: **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

PO 6: **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice

PO 7: **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO 8: **Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9: **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10: **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 11: **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12: **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1: **Communication:** Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.

PSO 2: **VLSI and Embedded Systems:** Design and Analyze Analog and Digital Electronic Circuits or systems and implement real time applications in the field of VLSI and Embedded Systems using relevant tools

PSO 3: **Signal Processing:** Apply the Signal processing techniques to synthesize and realize the issues related to real time applications

Date:

Course Instructor	Course Coordinator	Module Coordinator	HOD
Dr. V.Ravi Sekhara Reddy	Dr. P.Rakesh Kumar	Dr. Y.S.V.Raman	Dr. Y. Amar Babu

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr. M. Sivasankara Rao
Course Name & Code : Cellular and Mobile Communications & 17EC25
L-T-P Structure : 3-0-0 Credits : 3
Program/Sem/Sec : B.Tech., ECE., VI-Sem., Sections- A A.Y : 2021-22

PRE-REQUISITE: Analog and Digital Communication Systems, Antennas.

COURSE EDUCATIONAL OBJECTIVES (CEOs): This course provides the knowledge on basic operation of cellular systems, various techniques to improve the capacity of a cellular system, types of fading and its effects on the radio signal. This course will give an idea about various methods to reduce co-channel and adjacent channel interference. It also provides brief knowledge of Hand-off mechanism, multiple access techniques and digital cellular systems.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	**Understand** the concepts of cellular systems, interferences, frequency reuse, Handoff mechanism, frequency management and channel assignment strategies in cellular systems.
CO 2	**Apply** time, frequency, and code division multiple access techniques to digital cellular systems
CO 3	**Evaluate** co-channel and non co-channel interferences in cellular systems
CO 4	**Analyze** the radio propagation losses at cell site and mobile antennas

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	1	-	-	-	-	-	-	-	-	1	2	-	-
CO2	3	2	2	-	-	-	-	-	-	-	-	1	2	-	-
CO3	2	2	3	-	-	-	-	-	-	-	-	2	3	-	-
CO4	1	3	1	-	-	1	-	-	-	-	-	1	3	-	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

TEXTBOOKS:

T1 William.C.Y. Lee, "Mobile Cellular Telecommunications", Tata McGraw Hill, 2nd Edition, 2006.

T2 Gottapu Sasibhushana Rao, "Mobile Cellular Communication", Pearson Education, 1st Edition, 2013.

REFERENCE BOOKS:

R1 Theodore. S. Rappaport," Wireless Communications", Pearson education, 2nd Edition, 2002.

R2 Andrea Goldsmith," Wireless communications", Cambridge University press,2005.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

UNIT-I: Introduction to Cellular Systems- design and capacity

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Subject & course outcomes	1	23-02-2022		**TLM1**	
2.	Basic Cellular systems- analog, digital	1	25-02-2022		**TLM2**	
3.	Operation of a Cellular system-telephone call procedure	1	26-02-2022		**TLM2**	
4.	Operational channels, performance criteria	1	02-03-2022		**TLM2**	
5.	Uniqueness of mobile radio environment	1	04-03-2022		**TLM2**	
6.	Hexagonal shaped cells, Frequency Reuse, Frequency Reuse distance	1	05-03-2022		**TLM2**	
7.	Concept of frequency Reuse channels	1	09-03-2022		**TLM2**	
8.	Co-channel-Interference Reduction Factor, desired C/I from a normal case in a omni directional Antenna system	1	11-03-2022		**TLM2**	
9.	Cell splitting, sectoring, microcell concept **Assignement-01**	1	12-03-2022		**TLM2**	
No. of classes required to complete UNIT-I: 09				No. of classes taken:		

UNIT-II: Mobile Radio Propagation and antennas

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Basics of mobile radio propagation mechanisms	1	16-03-2022		**TLM2**	
2.	Free space propagation Model-Link budget design	1	18-03-2022		**TLM2**	
3.	Outdoor Propagation models, Indoor Propagation models	1	19-03-2022		**TLM2**	
4.	Small scale multipath propagation	1	23-03-2022		**TLM2**	
5.	Factors influencing fading, types of small-scale fading	1	25-03-2022		**TLM2**	
6.	Cell site antenna height, Omni directional antennas	1	26-03-2022		**TLM2**	
7.	directional antennas for interference reduction	1	30-03-2022		**TLM2**	
8.	diversity antennas, umbrella pattern antennas, Minimum separation of cell site receiving antennas	1	01-04-2022		**TLM2**	
9.	Mobile high gain antennas, Concept of sum and difference pattern. **Assignment-2**	1	06-04-2022		**TLM2**	
No. of classes required to complete UNIT-II: 09				No. of classes taken:		

UNIT-III: Interference

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Co-Channel Interference	1	08-04-2022		**TLM2**	
2.	Procedure to find nearest neighbors of a particular cell	1	09-04-2022		**TLM2**	
3.	Real time Co-Channel interference	1	20-04-2022		**TLM2**	
4.	Determination of Co-Channel interference area	1	22-04-2022		**TLM2**	
5.	Design of Antenna system	1	23-04-2022		**TLM2**	
6.	Impact on co-channel interference by lowering the antenna height	1	27-04-2022		**TLM2**	
7.	Non-co-channel interference	1	29-04-2022		**TLM2**	
8.	Different types of non co-channel interferences **Assignment-3**	1	30-04-2022		**TLM2**	
No. of classes required to complete UNIT-III: 08				No. of classes taken:		

UNIT-IV: Frequency Management, Channel Assignment, Handoff and Dropped Calls

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to frequency and channel management-Numbering and grouping,	1	04-05-2022		**TLM2**	
2.	Setup channels Access channels, paging channels	1	06-05-2022		**TLM2**	
3.	Channel assignments to cell sites and mobile units	1	07-05-2022		**TLM2**	
4.	Channel sharing and borrowing Sectorization, overlaid cells	1	11-05-2022		**TLM2**	
5.	Non-fixed channel assignment.	1	13-05-2022		**TLM2**	
6.	Handoff invitation, delaying Handoff, different types of handoff mechanisms	1	14-05-2022		**TLM2**	
7.	Dropped call rates. And their evaluation **Assignment-4**	1	18-05-2022		**TLM2**	
No. of classes required to complete UNIT-IV: 07				No. of classes taken:		

UNIT-V: Multiple access Techniques and Digital Cellular Systems

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to multiple access techniques	1	20-05-2022		**TLM2**	
2.	FDMA	1	21-05-2022		**TLM2**	
3.	TDMA	1	25-05-2022		**TLM2**	
4.	CDMA	1	27-05-2022		**TLM2**	
5.	**2G**: Global System for Mobile: Important features of GSM,	1	28-05-2022		**TLM2**	
6.	**3G** Systems-Universal Mobile Telecommunications System; Wideband CDMA; CDMA 2000	1	01-06-2022		**TLM2**	
7.	Introduction to **4G & 5G** technologies **Assignment-5**	1	03-06-2022		**TLM2**	
No. of classes required to complete UNIT-V: 07				No. of classes taken:		

Contents beyond the Syllabus

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Basics of Advanced mobile phone technologies- OFDMA, LTE, NOMA ..etc	1	04-06-2022		**TLM2**	

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions	21-02-2022	09-04-2022	7W
I Mid Examinations	11-04-2022	16-04-2022	1W
II Phase of Instructions	18-04-2022	04-06-2022	7W
II Mid Examinations	05-06-2022	11-06-2022	1W
Preparation and Practical Exams	13-06-2022	18-06-2022	1W
Semester End Examinations	20-06-2022	02-07-2022	2W

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	Marks
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
I-Mid Examination (Units-I & II)	M1=20
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=20
II-Quiz Examination (Units-III, IV & V)	Q2=10
Attendance	B=5
Assignment Marks = Best Four Average of A1, A2, A3, A4, A5	A=5
Mid Marks =75% of Max(M1,M2)+25% of Min(M1,M2)	M=20
Quiz Marks =75% of Max(Q1,Q2)+25% of Min(Q1,Q2)	B=10
Cumulative Internal Examination (CIE) : A+B+M+Q	40
Semester End Examination (SEE)	60
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	**Communication:** Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
PSO 2	**VLSI and Embedded Systems:** Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools
PSO 3	**Signal Processing:** Apply the Signal processing techniques to synthesize and realize the issues related to real time applications

Course Instructor	Course Coordinator	Module Coordinator	HOD
(Mr. M. Sivasankara Rao)	(Dr. Y.S.V. Raman)	(Dr. M.V. Sudhakar)	(Dr. Y. Amar Babu)

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (Autonomous)

L.B. Reddy Nagar, Mylavaram-521 230. Andhra Pradesh, INDIA

Department of Civil Engineering

COURSE HANDOUT

Part-A

PROGRAM : B.Tech., VI-Sem., ECE

ACADEMIC YEAR : 2021-22

COURSE NAME & CODE : **Industrial Engineering & Management** – 17MB80

L-T-P STRUCTURE : 3-0-0

COURSE CREDITS : 3

COURSE INSTRUCTOR : **Dr A Adisesha Reddy**

COURSE COORDINATOR : **Dr A Adisesha Reddy**

PRE-REQUISITE:

COURSE OBJECTIVE: Principles of management, Human resource management, Production management, Project management.

1. To make students understand management, its principles, contribution to management, organization, and its basic issues and types
2. To make student s understand the concept of plant location and its factors and plant layout and types, method of production and work study importance
3. To understand the purpose and function of statistical quality control and material management techniques
4. To make students understand the concept of HRM and its functions
5. To make students understand PERT & CPM methods in effective project management and need of project crashing and its consequence on cost of project

COURSE OUTCOMES (CO)

CO1	Apply management principles to the particle situations to be in a position to know which type of business organization structure suits
CO2	Able to make decision making relating to the problems in operations and production activities thereby improving the productivity by proper utilisation input factors by designing the better working methods and with better work study techniques. Able to make decision making relating to the problems in operations and production

	activities thereby improving the productivity by proper utilisation input factors by designing the better working methods and with better work study techniques.
CO3	Able to improve quality of working through SQC techniques and to take effective decision making relating to reduce the investment in materials through better control of inventory
CO4	Able to manage people in working environment with the practices of HRM across corporate businesses
CO5	Able to use PERT & CPM techniques in effective project management to identify critical path and try to complete projects on time as well as reducing the project durations if need anses.

COURSE ARTICULATION MATRIX (Correlation between COs&POs,PSOs):

COs	a	b	c	d	e	f	g	h	i	j	k	l	PSOa	PSOb	PSOc	PSOd
CO1	-	-	-	2	3	2	-	-	2	-	3	3	-	-	-	-
CO2	-	-	-	2	3	2	-	-	2	-	3	3	-	-	-	-
CO3	-	-	-	2	3	2	-	-	2	-	3	3	-	-	-	-
CO4	-	-	-	2	3	2	-	-	2	-	3	3	-	-	-	-
CO5	-	-	-	2	3	2	-	-	2	-	3	3	-	-	-	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight(Low), **2 -** Moderate(Medium), **3 -** Substantial (High).

BOS APPROVED TEXT BOOKS:

T 1 Dr. A.R.Aryasri , Management Science, TMH, 10th edition, 2012

BOS APPROVED REFERENCE BOOKS:

R 1 Koontz &weihrich - Essentials of management, TMH, 10^{111} edition, 201 5

R 2 Stoner, Freeman, Gilbert, Management , 6^{111} edition Pearson education, New Delhi, 2004

R 3 Bernard W. Taylor-Introduction to Management Science Twelfth Edition

O.P. Khana, Industrial engineering and Management L.S.Srinath, PERT & CPM

Part-B

COURSE DELIVERY PLAN (LESSON PLAN)
UNIT – I: Introduction

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction to Subject, Course Outcomes, Management - Definition, Nature	01	21.02.2022		**TLM 1**	CO1	T1	
2.	Importance of management Functions of Management	01	22.02.2022		**TLM 1**	CO1	T1	
3.	Taylor's scientific management theory	01	26.02.2022		**TLM 1**	CO1	T1	
4.	Fayal's principles of management	01	28.02.2022		**TLM 1**	CO1	T1	
5.	Contribution of Elton mayo, Maslow	01	05.03.2022		**TLM 1**	CO3	T1	

6.	Herzberg, Douglas MC Gregor,	01	07.03.2022		**TLM 2**	CO1	T1	
7.	Basic Concepts of Organization - Authority, Responsibility Delegation of Authority, span of control, departmentation	01	08.03.2022		**TLM 1**	CO1	T1	
8.	Organization structures (Line organization, Line a staff organization	01	12.03.2022		**TLM 3**	CO1	T1	
9.	Functional organization, Committee organization, Matrix organization	01	14.03.2022		**TLM 6**	CO1	T1	
No. of classes required to complete UNIT-I		09		No. of classes taken:				

UNIT – II Operations Management

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction to UNIT-II	01	15.03.2022		**TLM1**	CO2	T1	
2.	Plant location	01	19.03.2022		**TLM1**	CO2	T1	
3.	Factors influencing location	01	21.03.2022		**TLM2**	CO2	T1	
4.	Principles and types of plant layouts	01	22.03.2022		**TLM1**	CO2	T1	
5.	Methods of production Job, batch and mass production	01	26.03.2022		**TLM2**	CO2	T1	
6.	Work study, Basic procedure involved in method study	01	28.03.2022		**TLM1**	CO2	T1	
7.	Work measurement	01	29.03.2022		**TLM1**	CO2	T1	
No. of classes required to complete UNIT-II		07		No. of classes taken:				

UNIT-III: Statistical Quality Control & Materials Management

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction to UNIT-III,	01	04.04.2022		**TLM1**	CO3	T1	
2.	Statistical quality control	01	09.04.2022		**TLM1**	CO3	T1	
3.	Concept of Quality & Quality Control	01	18.04.2022		**TLM2**	CO3	T1	

4.	functions ,Meaningof SQC	01	19.04.2022		**TLM1**	CO3	T1	
5.	Variables and attributes		23.04.2022			CO3	T1	
6.	X chart, R Chart, C Chart, P Chart,(simple Problems)	01	25.04.2022		**TLM1**	CO3	T1	
7.	X chart, R Chart, C Chart, P Chart,(simple Problems)	01	26.04.2022		**TLM1**	CO3	T1	
8.	Acceptance sampling, Sampling plans	01	30.04.2022		**TLM1**	CO3	T1	
9.	Deming 's contribution to quality.	01	02.05.2022		**TLM1**	CO3	T1	
10.	Materials management - Meaning and objectives	01	07.05.2022		**TLM1**	CO3	T1	
11.	inventory control-Need for inventory control	01	09.05.2022		**TLM1**	CO3	T1	
12.	Purchase procedure	01	10.05.2022		**TLM1**	CO3	T1	
13.	Store records:EOQ, ABC analysis, Stock levels	01	14.05.2022		**TLM1**	CO3	T1	
No. of classes required to complete UNIT-III		13		No. of classes taken:				

UNIT IV – Human Resource management (HRM):

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction to UNIT-IV	01	14.05.2022		**TLM1**	CO2	T1	
2.	Concepts of HRM	01	16.05.2022		**TLM1**	CO2	T1	
3.	Basic functions of HR manager: Man power plarming	01	17.05.2022		**TLM1**	CO2	T1	
4.	Recruitment , Selection, Training and development	01	21.05.2022		**TLM1**	CO4	T1	
5.	Placement, Wage and salary administration	01	23.05.2022		**TLM1**	CO2	T1	
6.	Promotion, Transfers Separation, performance appraisal	01	24.05.2022		**TLM1**	CO4	T1	
7.	Job evaluation and merit rating	01	24.05.2022		**TLM2**	CO4	T1	
No. of classes required to complete UNIT-IV		07	28.05.2022		No. of classes taken:			

UNIT-V: Project management

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly

				Completion				
1.	Introduction to UNIT-V	01	28.05.2022		**TLM1**	CO5	T1	
2.	Early teclmiques in project management	01	30.05.2022		**TLM1**	CO5	T1	
3.	Network analysis: Programme evaluation and review teclmique (PERT),	01	31.05.2022		**TLM2**	CO5	T1	
4.	Critical path method (CPM), Identifying critical path	01	31.05.2022		**TLM1**	CO5	T1	
5.	Probability of completing project within given time	01	31.05.2022		**TLM1**	CO5	T1	
6.	Project cost analysis, project crashing	01	04.06.02022		**TLM3**	CO5	T1	
7.	simple problems	01	04.06.02022		TLM3	CO5	T1	
No. of classes required to complete UNIT-V		08			No. of classes taken:			

Teaching Learning Methods			
TLM 1	Chalk and Talk	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM 2	PPT	**TLM6**	Assignment or Quiz
TLM 3	Tutorial	**TLM7**	Group Discussion/Project
TLM 4	Demonstration (Lab/Field Visit)		

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions	20.09.2021	06.11.2021	7W
I Mid Examinations	08.11.2021	13.11.2021	1W
II Phase of Instructions	15.11.2021	15.01.2022	9W
II Mid Examinations	17.01.2022	22.01.2022	1W
Preparation and Practicals	24.01.2022	29.01.2022	1 W
Semester End Examinations	31.01.2022	12.02.2022	2W

Part - C

EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Cumulative Internal Examination : A+B	1,2,3,4,5	A+B=25
Semester End Examinations	1,2,3,4,5	C=75
Total Marks: A+B+C	1,2,3,4,5	100

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO I:To inculcate the adaptability skills into the students for software design, software development or any other allied fields of computing.

PEO II: To equip the graduates with the ability to analyze, design and synthesize data to create novel products.

PEO III: Ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.

PEO IV: To empower the student with the qualities of effective communication, team work, continues learning attitude, leadership needed for a successful computer professional. .

PROGRAMME OUTCOMES (POs)

Engineering Graduates will be able to

Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

Problem analysis: Identify, formulate, review research literature, and analyze complex engineeringproblems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

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.

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.

Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools includingprediction and modeling to complex engineering activities with an understanding of the limitations.

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.

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.

Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

Communication: Communicate effectively on complex engineering activities withthe engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

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 andleader in a team, to manage projects and in multidisciplinary environments.

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 OUTCOMES (PSOs):

PSO1: Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
PSO2: Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools.
PSO3: Apply the Signal processing techniques to synthesize and realize the issues related to real time applications.

Dr A Adisesha Reddy	**Dr A Adisesha Reddy**	Dr. A ADISESHA REDDY	Dr. A ADISESHA REDDY
Course Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
Accredited by NAAC & NBA (CSE, IT, ECE, EEE & ME)
Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada
L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr. A. Uday Kumar
Course Name & Code : Linear Control Systems
L-T-P Structure :2-2-0 Credits : 3
Program/Sem/Sec : B.Tech., ECE., VI-Sem., Sections- A A.Y : 2021-22

PRE-REQUISITE: Signals and Systems, Electrical Circuits and Networks.

COURSE EDUCATIONAL OBJECTIVES (CEOs): This course provides mathematical models for representing different control systems and various steps in deriving transfer function. Various techniques for time and frequency domain analysis will also be learnt. Verifying for stability of systems using frequency domain analysis will also be studied. The concept of state variables for the analysis of continuous system will be introduced.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Summarize the fundamental concepts of control systems.
CO 2	Apply Laplace transform and state space techniques to model dynamic systems.
CO 3	Analyze the stability of the system in time and frequency domain.
CO 4	Design controllers and the state-space model to test the performance of systems.

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	-	-	-	-	-	-	-	-	-	1	-	-	1
CO2	3	3	2	2	-	-	-	-	-	-	-	2	-	-	2
CO3	2	3	1	1	-	-	-	-	-	-	-	2	-	2	3
CO4	3	3	3	3	-	-	-	-	-	-	-	3	-	-	3

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

TEXT BOOKS:

T1 B. C. Kuo , "Automatic Control Systems" John wiley and son's ,8th edition, 2003..

T2 J. Nagrath and M. Gopal, "Control Systems Engineering", New Age International (P) Limited Publishers,2nd edition.

REFERENCE BOOKS:

R1 Katsuhiko Ogata, "Modern Control Engineering", Prentice Hall of India Pvt. Ltd., 3rd edition, 1998.

R2 Norman S. Nise, "Control Systems Engineering", 4th Edition, John Wiley, New Delhi.

R3 A. Nagoorkani, "Control Systems", *RBA Publications,* 2 nd edition, 2016.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Fundamentals of Control Systems & Representation of Control systems

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Course and COs	1	21.02.2022			
2.	Introduction to control systems.	1	22.02.2022			
3.	Classification of Control systems	1	25.02.2022			
4.	Open loop and Closed loop control systems	1	26.02.2022			
5.	Feedback characteristics.	1	28.02.2022			
6.	Block Diagrams, Reduction rules	1	04.03.2022			
7.	Problems on Block diagram Reduction	1	05.03.2022			
8.	Signal Flow Graph Terminology	1	07.03.2022			
9.	**Tutorial-1**	1	08.03.2022			
10.	SFG Reduction using Masons Gain Formula.	1	11.03.2022			
11.	**Tutorial-2**	1	12.03.2022			
No. of classes required to complete UNIT-I:**11**				No. of classes taken:		

UNIT-II: Mathematical Models & Time Response Analysis

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Translational mechanical Systems	1	14.03.2022			
2.	Rotational Mechanical Systems	1	15.03.2022			
3.	Analogous of Mechanical systems to electrical systems	1	19.03.2022			
4.	Armature controlled DC Motor	1	21.03.2022			
5.	Field controlled DC Motor	1	22.03.2022			
6.	Synchro transmitter and receiver.	1	25.03.2022			
7.	Standard test signals and Time response of first order systems	1	26.03.2022			
8.	Response of second order system	1	28.03.2022			
9.	**Tutorial-3**	1	29.03.2022			
10.	Time domain specifications, Steady state errors and error constants	1	01.04.2022			
11.	Effects of P, PD, PI systems	1	04.04.2022			
12.	**Tutorial-4**	1	08.04.2022			
No. of classes required to complete UNIT-II:**12**				No. of classes taken:		

UNIT-III: Stability in Time domain

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	The concept of stability	1	09.04.2022			
2.	Routh's Hurwitz stability criterion, Qualitative and Conditional stability	1	18.04.2022			
3.	**Tutorial-5**		19.04.2022			

4.	Root Locus Technique	1	22.04.2022			
5.	Construction of root loci	1	23.04.2022			
6.	Limitations of Routh‟s Hurwitz stability, Effects of adding poles to G(s)H(s) on the root loci.	1	25.04.2022			
7.	**Tutorial-6**	1	26.04.2022			
8.	Effects of adding zeros to G(s)H(s) on the root loci.	1	29.04.2022			
No. of classes required to complete UNIT-III:**09**				No. of classes taken:		

UNIT-IV : Frequency domain Analysis , Nyquist Plots & Compensators

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Frequency domain analysis	1	30.04.2022			
2.	Frequency domain specifications	1	02.05.2022			
3.	**Tutorial-7**	1	06.05.2022			
4.	Bode plot , Stability Analysis from Bode Plots	1	07.05.2022			
5.	**Tutorial-8**	1	09.05.2022			
6.	Polar Plots, Nyquist Plots	1	10.05.2022			
7.	Procedure to plot the Nyquist Plots	1	13.05.2022			
8.	Determination of stability from Polar plots and Nyquist Plots	1	14.05.2022			
9.	Lead compensator, Lag compensator, Lead-Lag compensator.	1	16.05.2022			
10.	**Tutorial-9**	1	17.05.2022			
No. of classes required to complete UNIT-IV:**10**				No. of classes taken:		

UNIT-V : State Space Analysis of Continuous Systems:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Concepts of state, state variables and state model	1	20.05.2022			
2.	Derivation of state models from transfer function.	1	21.05.2022			
3.	Derivations of transfer function from state models.	1	23.05.2022			
4.	**Tutorial-10**	1	24.05.2022			
5.	Solution of state equations	1	27.05.2022			
6.	State Transition Matrix	1	28.05.2022			
7.	Computation of state transition matrix using Laplace transformation method	1	30.05.2022			
8.	**Tutorial-11**	1	31.05.2022			
9.	Concept of Controllability & Observability	1	03.06.2022			
No. of classes required to complete UNIT-V:**9**				No. of classes taken:		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1	21.02.2022	09.04.2022	7W
I Mid Examinations	11.04.2022	16.04.2022	1W
II Phase of Instructions	18.04.2022	04.06.2022	9W
II Mid Examinations	06.06.2022	11.06.2022	1W
Preparation and Practicals	13.06.2022	18.06.2022	1W
Semester End Examinations	20.06.2022	02.07.2022	2W

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	Marks
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
I-Mid Examination (Units-I & II)	M1=20
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=20
II-Quiz Examination (Units-III, IV & V)	Q2=10
Attendance	B=5
Assignment Marks = Best Four Average of A1, A2, A3, A4, A5	A=5
Mid Marks =75% of Max(M1,M2)+25% of Min(M1,M2)	M=20
Quiz Marks =75% of Max(Q1,Q2)+25% of Min(Q1,Q2)	B=10
Cumulative Internal Examination (CIE) : A+B+M+Q	40
Semester End Examination (SEE)	60
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	**Communication:** Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
PSO 2	**VLSI and Embedded Systems:** Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools
PSO 3	**Signal Processing:** Apply the Signal processing techniques to synthesize and realize the issues related to real time applications

Course Instructor	Course Coordinator	Module Coordinator	HOD
Mr.A. Uday Kumar	Mrs.B.Rajeswari	Dr. G L N Murthy	Dr. Y Amar Babu

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr. P. Lachi Reddy
Course Name & Code : Microprocessors and Microcontrollers – 17EC22
L-T-P Structure : 3-0-0 Credits : 3
Program/Sem/Sec : B.Tech., ECE., VI-Sem., Section-A A.Y : 2021-22

PRE-REQUISITES: Digital Circuits, Computer Organization.

COURSE EDUCATIONAL OBJECTIVES (CEOs): In this course student will learn about the Architecture of 8086 Microprocessor and 8051 Microcontroller and their Assembly Language Programming, interfacing Memory and Various Peripherals with 8086 Microprocessor/8051 Microcontroller and concepts of Interrupts and Serial Communication in reference to 8086.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	**Understand** the architecture and operation of 8086 Microprocessor & 8051 Microcontroller.
CO 2	**Apply** the instructions of 8086/8051 for various applications.
CO 3	**Analyze** the operation of peripherals and devices for different applications.
CO 4	**Design** a system by interfacing memory, peripherals and I/O devices to 8086/8051

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	-	-	-	-	-	-	-	-	-	1	-	1	-
CO2	3	3	1	-	-	-	-	-	-	-	-	2	-	2	-
CO3	2	3	3	-	-	-	-	-	-	-	-	3	-	3	-
CO4	3	3	3	-	-	-	-	-	-	-	-	3	-	3	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

TEXT BOOKS:

T1 Douglas V. Hall, "Micro Processors & Interfacing", TMH, 2007.
T2 A. K. Ray and K. M. Bhurchandi, "Advanced Microprocessor And Peripherals", 2nd Edition TMH Publishers.
T3 Muhammad Ali Mazidi, Janice Gillispie Mazidi, Rolin D. Mckinlay "Microcontrollers and Embedded System", Pearson Education Publishers, 2nd Edition

REFERENCE BOOKS:

R1 Raj Kamal, "Microcontrollers Architecture, Programming, Interfacing and System Design", Pearson Education Publishers.
R2 J. K. Uffenbeck, "The 8088 and 8086 Micro Processors", PHI, 4th Edition, 2003.
R3 Ajay Deshmukh, "Micro Controllers-Theory and Applications", Tata McGraw Hill Publishers.
R4 Kenneth J. Ayala, "The 8051 Micro Controller", Cengage Learning Publishers, 3rd Edition, 2000.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section - B

UNIT-I: Microprocessor Architecture, Instruction Set:

S. No.	Topics	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Microprocessors	1	22-02-2022			
2.	Types of µprocessors, features & comparison, µprocessor- Architecture	1	24-02-2022			
3.	General purpose registers and Special functions	1	25-02-2022			
4.	Flag register and function of Flags, Addressing modes.	1	03-03-2022			
5.	Instruction set of 8086	1	04-03-2022			
6.	Assembly language programs involving logical, Branch and Call instructions.	1	08-03-2022			
7.	Assembly language programs for Sorting and Arithmetic Expressions	1	10-03-2022			
8.	String manipulation Instructions	1	11-03-2022			
9.	Assembler directives, Procedures	1	15-03-2022			
10.	Macros, **Assignment**	1	17-03-2022			
No. of classes required to complete UNIT-I:		**10**	No. of classes taken:			

UNIT-II: 8086 Memory and I/O Interfacing:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Pin diagram of 8086	1	22-03-2022			
2.	Minimum mode of operation	1	24-03-2022			
3.	Maximum mode of operation	1	25-03-2022			
4.	Timing diagram.	1	29-03-2022			
5.	Memory interfacing to 8086	1	31-03-2022			
6.	Static RAM , EPROM and I/O interfacing to 8086	1	01-04-2022			
7.	Interrupt structure of 8086	1	07-04-2022			
8.	Interrupt service routines and Interrupt Vector table, **Assignment**	1	08-04-2022			
No. of classes required to complete UNIT-II:		**08**	No. of classes taken:			

UNIT-III: Peripherals and Devices:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	DMA Controller 8237	1	19-04-2022			
2.	Interrupt Controller 8259	1	21-04-2022			
3.	Cascading of 8259	1	22-04-2022			
4.	USART 8251	1	26-04-2022			
5.	8255 PPI Modes of operation	1	28-04-2022			
6.	Keyboard interfacing	1	29-04-2022			
7.	D/A Converter interfacing	1	05-05-2022			
8.	A/D Converter interfacing, **Assignment**	1	06-05-2022			
No. of classes required to complete UNIT-III:		**08**	No. of classes taken:			

UNIT-IV: Microcontroller:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	8051 µcontroller Architecture	1	10-05-2022			
2.	8051Pin Diagram	1	12-05-2022			
3.	Addressing modes	1	13-05-2022			
4.	8051 Instruction Set	1	17-05-2022			
5.	8051 Programs	1	19-05-2022			
6.	8051 Memory and I/O interfacing, **Assignment**	1	20-05-2022			
No. of classes required to complete UNIT-IV:		**06**	No. of classes taken:			

UNIT-V: 8051 Interfacing:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Modes of timer operation	1	24-05-2022			
2.	Serial port operation	1	26-05-2022			
3.	Interrupt structure of 8051	1	27-05-2022			
4.	Interfacing of Seven segment Displays	1	31-05-2022			
5.	Stepper Motor and Serial/Parallel Printer interfacing, **Assignment**	1	02-06-2022			
No. of classes required to complete UNIT-V:		**05**	No. of classes taken:			

Contents beyond the Syllabus

S. No.	Topics	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Advanced Microprocessors	1	03-06-2022			

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	**Marks**
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
I-Mid Examination (Units-I & II)	M1=20
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=20
II-Quiz Examination (Units-III, IV & V)	Q2=10
Mid Marks =75% of Max(M1, M2)+25% of Min(M1, M2)	M=20
Quiz Marks =75% of Max(Q1, Q2)+25% of Min(Q1, Q2)	Q=10
Assignment Marks = Average of Best Four of A1, A2, A3, A4, A5	A=5
Attendance	B=5
Cumulative Internal Examination (CIE) : M+Q+A+B	40
Semester End Examination (SEE)	60
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	**Communication:** Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
PSO 2	**VLSI and Embedded Systems:** Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools
PSO 3	**Signal Processing:** Apply the Signal processing techniques to synthesize and realize the issues related to real time applications

Date: 18-02-2022

Course Instructor	Course Coordinator	Module Coordinator	HOD
Dr. P. Lachi Reddy	Mr. K. Sasi Bhushan	Dr. P. Lachi Reddy	Dr. Y. Amar Babu

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT

PROGRAM : B.Tech. VI Sem., ECE-A

ACADEMIC YEAR : 2021-2022

COURSE NAME & CODE : OOPS Through JAVA LAB – 17CI65

L-T-P STRUCTURE : 0-0-2

COURSE CREDITS 1

COURSE INSTRUCTOR : **Mr. D.Srinivasa Rao**

COURSE COORDINATOR :

PRE-REQUISITE: C & C++

COURSE OBJECTIVE:

Concentrates on the methodological and technical aspects of software design andprogramming based on OOP. Acquire the basic knowledge and skills necessary to implement object-oriented programming techniques in software development through java. Know about the importance of GUI based applications and the development of applications through java.

COURSE OUTCOMES (COs)

At the end of the course, the student will be able to:

CO1: Implement the concepts of OOP in program design.

CO2: Apply Exception handling mechanism and implement Multi-thread programming.

CO3: Design CUI and GUI based applications using JDBC concepts.

CO4: Improve individual / teamwork skills, communication & report writing skills withethical values.

COURSE ARTICULATION MATRIX (Correlation between Cos &POs, PSOs):

Course Code	COs	Programme Outcomes												PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
17CI60	CO1	2	3	3	1	1	-	-	-	-	-	-	1	3	-	-
	CO2	2	3	3	1	1	-	-	-	-	-	-	1	3	-	-
	CO3	2	3	3	1	1	-	-	-	-	-	-	1	3	3	1
	CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-
1 = Slight (Low) **2 = Moderate (Medium)** **3-Substantial(High)**																

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'1-** Slight (Low), **2 -** Moderate (Medium), **3 -** Substantial (High).

S.No.	Programs to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Java programming	2	21-02-2022 & 24-02-2022		TLM8	
2.	Introduction to Java Compiler	2	28-02-2022 & 03-03-2022		TLM8	
3.	Programs on Basic control structures & Loops	2	07-03-2022 & 10-03-2022		TLM4 / TLM5	
4.	Programs on Basic control structures & Loops	2	14-03-2022 & 17-03-2022		TLM4 / TLM5	
5.	Programs on recursion	2	21-03-2022 & 24-03-2022		TLM4 / TLM5	
6.	Programs on Arrays	2	28-03-2022 & 31-03-2022		TLM4 / TLM5	
7.	Programs on Constructors & Method Overloading	2	04-04-2022 & 07-04-2022		TLM4 / TLM5	
8.	Programs on String & String Buffer classes	2	18-04-2022 & 22-04-2022		TLM4 / TLM5	
9.	Programs on Inheritance, super and final keyword	2	25-04-2022 & 28-04-2022		TLM4 / TLM5	
10.	Programs on Run-Time Polymorphism, Packages, andInterfaces	2	02-05-2022 & 05-05-2022		TLM4 / TLM5	
11.	Programs on Exception Handling& Multithreading	2	09-05-2022 & 12-05-2022		TLM4 / TLM5	
12.	Programs on Applets & Event Handling	2	16-05-2022 & 19-05-2022		TLM4 / TLM5	
13.	Programs on Applets & Event Handling	2	23-05-2022 & 26-05-2022		TLM4 / TLM5	
14.	Programs on AWT Components & Layout Managers, Programs onSwings	2	30-05-2022 & 02-06-2022		TLM4 / TLM5	

Teaching Learning Methods					
TLM1	Chalk and Talk	**TLM4**	Problem Solving	**TLM7**	Seminars or GD
TLM2	PPT	**TLM5**	Programming	**TLM8**	Lab Demo
TLM3	Tutorial	**TLM6**	Assignment or Quiz	**TLM9**	Case Study

ACADEMIC CALENDAR

Description	From	To	Weeks
I Phase of Instructions-1	21-02-2022	09-04-2022	7W
I Mid Examinations	11-04-2022	16-04-2022	1W
II Phase of Instructions	18-04-2022	04-06-2022	7W
II Mid Examinations	06-05-2022	11-06-2022	1W
Preparation and Practicals	13-06-2022	18-06-2022	1W
Semester End Examinations	20-06-2022	02-07-2022	2W

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

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

PROGRAM SPECIFIC OUTCOMES (PSOs):

PSO1	**Programming Paradigms:** To inculcate algorithmic thinking, formulation techniques and visualization, leading toproblem solving skills using different programming paradigms.
PSO2	**Data Engineering:** To inculcate an ability to Analyze, Design and implement data driven applications into the students.
PSO3	**Software Engineering:** Develop an ability to implement various processes / methodologies /practices employed in desivalidation, testing and maintenance of software products

Course Instructor	**Course Coordinat**	**Module Coordinat**	**HOD**
D.Srinivasa Rao			**Dr. D.Veeraiah**

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUTPART-A

PROGRAM : B.Tech. VI-Sem., ECE-A
ACADEMIC YEAR : 2021-22
COURSE NAME & CODE : **JAVA PROGRAMMING – 17CI07**
L-T-P STRUCTURE : 3-0-0
COURSE CREDITS 3
COURSE INSTRUCTOR : **Mr.D.Srinivasa Rao**
COURSE COORDINATOR :
PRE-REQUISITE: Knowledge of Procedural Programming Language
COURSE OBJECTIVE:

Concentrates on the methodological and technical aspects of software design and programming based on OOP. Acquire the basic knowledge and skills necessary to implement object-oriented programming techniques in software development through JAVA. Know about the importance of GUI based applications and the development of those Applications through JAVA. Get sufficient knowledge to enter the job market related to web development.

COURSE OUTCOMES (CO)

At the end of the course, the student will be able to

CO1: Identify Object Oriented concepts through constructs of JAVA.
CO2: Understand the importance of Packages, Interfaces and implement Exception handlingmechanisms.
CO3: Explore the concept of Multithreading and Develop GUI based applications using applets.
CO4: Design GUI based applications using AWT controls and explore the concept of Eventhandling.
CO5: Illustrate the basic concepts of JDBC and networking.

COURSE ARTICULATION MATRIX (Correlation between Cos &POs, PSOs):

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	1	2	-	-	-	-	-	-	-	-	1	3	-	1
CO2	3	3	2	-	1	-	-	-	-	-	-	1	3	-	1
CO3	3	2	3	-	1	-	-	-	-	-	-	1	3	-	1
CO4	3	2	3	-	1	-	-	-	-	-	-	1	3	-	1
CO5	3	2	2	-	1	-	-	-	-	-	-	1	3	3	1

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'1-** Slight (Low), **2 -** Moderate(Medium), **3 -** Substantial (High).

TEXT BOOKS:

T1 Herbert Schildt, "Java: The complete Reference", TMH Publications, 7th edition, 2006.

REFERENCE BOOKS:

R1 Dr.R.Nageswara Rao, "Core JAVA: An Integrated Approach", Dreamtech Press, 1st Edition, 2008.

R2 E.Balaguruswamy, "Programming with JAVA", TMH Publications, 2nd Edition, 2000.

R3 Patrick Niemeyer & Jonathan Knudsen, "Learning Java", O'REILLY Publications, 3rd Edition, 2005.

R4 Benjamin J Evans & David Flanagan, "Java-in a Nutshell – A desktop quick reference", O'REILLY Publications, 6th Edition, 2014.

R5 David Flanagan, "Java Examples in a nutshell – A Tutorial companion to java in a nutshell", O'REILLY Publications, 3rd Edition, 2004.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction to Java Language and Classes

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Drawbacks of POP, Object Oriented paradigm	1	21-02-2022		**TLM1/ TLM2**	
2.	OOP Concept	1	23-02-2022		**TLM1/ TLM2**	
3.	Java Buzzwords, Byte Code, Simple types	1	24-02-2022		**TLM1/ TLM2**	
4.	Arrays, Type Conversion and Casting	1	28-02-2022		**TLM1/ TLM2**	
5.	Simple Java Programs , Class Fundamentals	1	02-03-2022		**TLM1/ TLM2/ TLM5**	
6.	Declaring Objects, Access Control and recursion, Constructors	1	03-02-2022		**TLM1/ TLM2/ TLM5**	
7.	Garbage Collection, Programson String and String Buffer classes and Wrapper classes	1	07-03-2022		**TLM1/ TLM2/ TLM5**	
8.	Tutorial – 1 / Assignment - 1	1	09-03-2022		**TLM3 / TLM6**	
No. of classes required to complete UNIT-I		8		No. of classes taken:		

UNIT-II: Inheritance & Polymorphism, Packages and Interfaces

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
9.	Inheritance Basics, Super Keyword, Multilevel Hierarchy,	1	10-03-2022		**TLM1/ TLM2**	
10.	Method Overloading & Method Overriding	1	14-03-2022		**TLM1/ TLM2**	
11.	Dynamic method dispatch, Abstract class, Object class and final keyword.	1	16-03-2022		**TLM1/ TLM2**	
12.	Package definition, Accessing package, understanding CLASSPATH	1	17-03-2022		**TLM1/ TLM2**	
13.	Importing Packages, java.util package	1	21-03-2022		**TLM1/ TLM2**	
14.	Defining, Implementing and Applying Interfaces	1	23-03-2022		**TLM1/ TLM2**	
15.	Variables in interface and extending interfaces	1	24-03-2022		**TLM1/ TLM2**	
16.	Differences between classes and interfaces	1	28-03-2022		**TLM1/ TLM2**	

17.	Tutorial – 2 / Assignment - 2	1	30-03-2022		**TLM3 / TLM6**	
No. of classes required to complete UNIT-II		9		No. of classes taken:		

UNIT-III: Exception Handling, Multithreading

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
18.	Exception Handling Fundamentals, Exception types,	1	31-03-2022		**TLM1/ TLM2**	
19.	Usage of try & catch , throws and finally	1	04-04-2022		**TLM1/ TLM5**	
20.	Java Built-in Exceptions	1	06-04-2022		**TLM1/ TLM2**	
21.	Differences between multi-threading and muti-tasking.	1	07-04-2022		**TLM1/ TLM2**	
22.	Java thread model Creating thread	1	18-04-2022		**TLM1/ TLM2**	
23.	Multiple threads	1	20-04-2022		**TLM1/ TLM2**	
24.	Synchronizing threads	1	21-04-2022		**TLM1/ TLM2**	
25.	Tutorial – 3 / Assignment - 3	1	25-04-2022		**TLM3 / TLM6**	
No. of classes required to complete UNIT-III		08		No. of classes taken:		

UNIT-IV: Applet class and Event Handling

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
26.	Concepts of Applets, Differences between Applets and Applications	1	27-04-2022		**TLM1/ TLM2**	
27.	Applet Architecture, skeleton, and creation.	1	28-04-2022		**TLM1/ TLM2**	
28.	Passing parameters to applets and working with graphics class.	1	02-05-2022		**TLM1/ TLM2**	
29.	Event handling mechanisms, Events and Event sources.	1	04-05-2022		**TLM1/ TLM2**	
30.	Event class, Listener interface, Delegation event model.	1	05-05-2022		**TLM1/ TLM2**	
31.	Keyboard and Mouse Events, Adapter class, Inner class.	1	09-05-2022		**TLM1/ TLM2**	
32.	Tutorial – 4 / Assignment - 4	1	11-05-2022		**TLM3 / TLM6**	
No. of classes required to complete UNIT-IV		07		No. of classes taken:		

UNIT-V: AWT Controls and Introduction to Swings

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
33.	Label, button, Scrollbars, Text Components	1	12-05-2022		**TLM1/ TLM2/ TLM5**	
34.	Check Box, Check Box groups, choices, controls, lists	1	16-05-2022		**TLM1/ TLM2/ TLM5**	
35.	Scrollbar, Text field, Layout Managers – border, grid, flow	1	18-05-2022		**TLM1/ TLM2/ TLM5**	
36.	Introduction to swing, Key features, Limitations of AWT	1	19-05-2022		**TLM1/ TLM2/ TLM5**	

37.	Components and Containers, Swing packages.	1	23-05-2022		**TLM1/ TLM2/ TLM5**	
38.	Creating Swing applet, JApplet class, JComponents – Labels, Text fields, buttons	1	25-05-2022		**TLM1/ TLM2/ TLM5**	
39.	Jbutton class, Tabbed Panes, Scroll Panes, Tables, Tutorial – 5 / Assignment - 5	1	26-05-2022		**TLM1/ TLM2/ TLM5**	
No. of classes required to complete UNIT-V		07		No. of classes taken:		

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
40.	Differences Between C,C++ & Java	1	30-05-2022		**TLM1**	
41.	Differences Between C,C++ & Java	1	02-06-2022		**TLM1**	

Teaching Learning Methods					
TLM1	Chalk and Talk	**TLM4**	Problem Solving	**TLM7**	Seminars or GD
TLM2	PPT	**TLM5**	Programming	**TLM8**	Lab Demo
TLM3	Tutorial	**TLM6**	Assignment or Quiz	**TLM9**	Case Study

PART-C

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1	21-02-2022	09-04-2022	7W
I Mid Examinations	11-04-2022	16-04-2022	1W
II Phase of Instructions	18-04-2022	04-06-2022	7W
II Mid Examinations	06-05-2022	11-06-2022	1W
Preparation and Practicals	13-06-2022	18-06-2022	1W
Semester End Examinations	20-06-2022	02-07-2022	2W

EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment –1	1	A1=5
Assignment –2	2	A2=5
Quiz-1	1,2	B1=10
I-Mid Examination	1,2	C1=20
Assignment –3	3	A3=5
Assignment –4	4	A4=5
Assignment --5	5	A5=5
Quiz-2	3,4,5	B2=10
II-Mid Examination	3,4,5	C2=20
Evaluation of Assignment Marks: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Quiz Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=10
Evaluation of Mid Marks: C=75% of Max(C1,C2)+25% of Min(C1,C2)	1,2,3,4,5	C=20
Attendance	-	D=5
Cumulative Internal Examination : A+B+C+D	**1,2,3,4,5**	**A+B+C+D=40**
Semester End Examinations	**1,2,3,4,5**	**E=60**
Total Marks: A+B+C+D+E	**1,2,3,4,5**	**100**

PART-D

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

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

PROGRAM SPECIFIC OUTCOMES(PSOs):

PSO1	**Programming Paradigms:** To inculcate algorithmic thinking, formulation techniques and visualization, leading toproblem solving skills using different programming paradigms.
PSO2	**Data Engineering:** To inculcate an ability to Analyse, Design and implement data driven applications intothe students.
PSO3	**Software Engineering:** Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products

Course Instructor **Course Coordinat** **Module Coordinato** **HOD**

D.Srinivasa Rao **Dr. D.Veeraiah**

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ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr Pawel Veliventi
Course Name & Code : Presentation Skills Lab; 17FE61
L-T-P Structure : 0-0-2+2 Credit : 1
Program/Sem/Sec : B.Tech.,ECE , VI-Sem., Section- A A.Y: 2021-22

PRE-REQUISITE: Should have fundamental knowledge in making conversations in English and be with readiness to speak

COURSE EDUCATIONAL OBJECTIVE (CEOs): To help students make oral presentations, power point presentations, participate in group discussions and write project/research/technical reports/formal letters by gathering information and organizing ideas relevantly and coherently.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Make power point presentations and oral presentations
CO 2	Use standard vocabulary contextually.
CO 3	Manage skillfully through group discussions.
CO 4	Negotiate skillfully for better placement.

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

Course		**Program Outcomes (POs)**											
	POs→	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Presentation Skills Lab 17FE61	**CO1**		1		3		2			3	3		2
	CO2		1		3		2			3	3		2
	CO3		1		3		2			3	3		2
	CO4		1		3		2			3	3		2

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2** – Moderate (Medium), **3** - Substantial (High).

Bos Approved Lab Manual:

Board of Editors, "ELCS Lab Manual – A Workbook of CALL and ICS Lab Activities", Orient Black Swan Pvt. Ltd., Hyderabad, 2016.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Activity	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
1.	Introduction	2	5-3-2022		TLM4	CO1	
2.	JAM- I (prepared)	2	12-3-2022		TLM4	CO1	
3.	JAM-II (Extempore)	2	19-3-2022		TLM4	CO1	
4.	Group Discussion	2	26-3-2022		TLM4, TLM6	CO3	
5.	Reading Comprehension/Listening Comprehension	2	16-4-2022		TLM3	CO2	
6.	Poster/ Powerpoint Presentations	2	23-4-2022		TLM2, TLM4	CO1	
7.	Vocabulary(one-word substitutes/analogy/idioms)	2	30-4-2022		TLM1, TLM3	CO2	
8.	Vocabulary(Synonyms/Antonyms)	2	7-5-2022		TLM1, TLM3	CO2	
9.	Letter & Résumé writing	2	21-5-2022		TLM1, TLM3	CO4	
10.	Mock Interviews	2	28-5-2022		TLM4	CO4	
11.	Internal Lab Exam	2	4-6-2022				
	Total	**22**					

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

Part - C

EVALUATION PROCESS:

According to Academic Regulations of R17 Distribution and Weightage of Marks for Laboratory Courses is as follows:

(a) Continuous Internal Evaluation (CIE):

- ✓ The continuous internal evaluation for laboratory courses (including Computer aided engineering drawing, computer aided engineering graphics, Computer aided machine drawing etc.) is based on the following parameters:

Parameter		Marks
Day – to – Day Work	Observation	10 Marks
	Record	10 Marks
Internal Test		10 Marks
Attendance		05 Marks
Viva – Voce During Regular Lab Sessions		05 Marks
Total		**40 Marks**

(b) Semester End Examinations (SEE:

- ✓ The performance of the student in laboratory courses shall be evaluated jointly by internal and external examiners for 3 hours duration as per the parameters indicated below:

Sl.No.		Topic	Marks
I.	i.	Synonyms	5
	ii.	Antonyms	5
	iii	One-Word substitutes	5
	iv	Idioms	2 ½
	v	Analogy	2 ½
II.		Resum`e	5
III.		Reading Comprehension	5
IV.		Oral & written task (JAM/GD/PPT)	20
V.		Interview	10
		Total	**60**

% of Attendance	Marks
≥ 95	05 Marks
90 to < 95	04 Marks
85 to < 90	03 Marks
80 to < 85	02 Marks
75 to < 80	01 Mark

Rubrics For Evaluation of Laboratory Courses								
Day-To-Day Lab (Observation) Performance Evaluat 17)				**Record Performance Evaluation (R-17)**				
S.N	**Criteria**	**Poor**	**Average**	**Good**	**Criteria**	**Poor**	**Average**	**Good**
1	Language suitability **(4 Marks)**	Wrong usage of words Grammatical errors **(2 Marks)**	Some points are missing from the data written Wrong usage of grammar & vocabulary. **(3 Marks)**	Well-written & spoken Language is error free **(4 Marks)**	Languag e **(4 Marks)**	Language used is not suitable Full of incorrect vocabulary **(2 Marks)**	Some words are inapprop riately used / wrongly spelt **(3Mark s)**	Language used is good No word/ spelling errors **(4 Marks)**
2	Content **(4Marks)**	Unable to Deliver all the pints Delivering Irrelevant point **(2 Marks)**	Some points are not given Point analysis is not up to the mark **(3 Marks)**	All the points are analyzed properly More content was delivered. **(4 Marks)**	Content **(4 Marks)**	Very less points were written Points were not analyzed properly **(2 Marks)**	Some of the points were missing Some points are not properly analyzed **(3 Marks)**	Complete information is provided for the topic Important information is provided with illustrations/ examples **(4 Marks)**
3	Style of Presentati on **(2 Marks)**	Inappropriate body language Improper presentation **(0 Marks)**	Presentation is not up to the mark **(1 Mark)**	Presented well with appropriat e etiquette All important conclusion s have been clearly made, student shows good understan ding of the topic. **(2 Marks)**	Gramma r& Neatness **(2 Mark)**	Frequent grammar and/r spelling errors writing style is rough and immature **(1/2 Mark)**	Some grammat ical errors **(1 Marks)**	No grammar/ spelling corrections are found and well-written **(2 Marks)**

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
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PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
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PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Course Instructor	Course Coordinator	Module Coordinator	HOD
Dr Pawel Veliventi	Dr.B. Samrajya Lakshmi	Dr.B. Samrajya Lakshmi	Dr.A. Rami Reddy

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DEPARTMENT OF ECE

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr. T. Satyanarayana and Dr. A. Narendra Babu
Course Name & Code : Seminar
L-T-P Structure : 0-0-2 **Credits**: 1
Program/Sem/Sec : B.Tech., ECE., **VI**-Sem., Section- **A** **A.Y.** : 2021-22

PRE-REQUISITE: Knowledge on English and basic concepts in electronics and communication engineering.

COURSE EDUCATIONAL OBJECTIVES (CEOs): This course enables the students in Review of literature, analyze complex engineering problems relevant to the society and industry Transforms, Analyze the insight into modern technologies, tools and systems in the field of Electronics & Communication Engineering and enhances the English communication skills.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Review literature, analyze complex engineering problems relevant to the society and industry
CO 2	Analyze the insight into modern technologies, tools and systems in the field of Electronics & Communication Engineering
CO 3	Adapt communication & Presentation skills
CO 4	Develop Report writing skills.

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	**3**	**2**	**1**	**-**	**2**	**2**	**-**	**-**	**2**	**-**	**-**	**3**	**3**	**3**	**3**
CO2	**1**	**2**	**2**	**2**	**3**	**2**	**-**	**-**	**2**	**-**	**-**	**3**	**3**	**3**	**3**
CO3	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**3**	**-**	**-**	**-**
CO4	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**3**	**-**	**-**	**-**

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Seminar presentation and Report writing	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Seminar Introduction	2	22-02-2022		TLM2	
2.	Seminar Introduction	2	08-03-2022		TLM2	
3.	Seminar presentation by Roll No. **18761A0462**, **19761A0401 to 19761A0410**	2	15-03-2022		TLM2	
4.	Seminar presentation by Roll No. **19761A0411 to 19761A0420**	2	22-03-2022		TLM2	
5.	Seminar presentation by Roll No. **19761A0421 to 19761A0430**	2	29-03-2022		TLM2	
6.	Seminar presentation by Roll No. **19761A0431 to 19761A0440**	2	05-04-2022		TLM2	
7.	Seminar presentation by Roll No. **19761A0441 to 19761A0450**	2	12-04-2022		TLM2	
8.	Seminar presentation by Roll No. **19761A0451 to 19761A0460**	2	19-04-2022		TLM2	
9.	Seminar presentation by Roll No. **19761A0461 to 19761A0464**	2	26-04-2022		TLM2	

	20765A0401 to 20765A0406					
10.	Report Preparation and submission	2	10-05-2022			
11.	Report Preparation and submission	2	17-05-2022			
12.	Report Preparation and submission	2	24-05-2022			
13.	Report Preparation and submission	2	31-05-2022			
14.	Report Preparation and submission	2	07-06-2022			
No. of classes required to complete: 28				**No. of classes taken:**		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	**Marks**
Survey	10
Quality of work	20
Seminar report	20
Presentation	30
Interaction	20
Total Marks:	**100**

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
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PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
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PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	**Communication:** Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
PSO 2	**VLSI and Embedded Systems:** Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools
PSO 3	**Signal Processing:** Apply the Signal processing techniques to synthesize and realize the issues related to real time applications

Course Instructor	Course Coordinator	Module Coordinator	HOD
(Dr. T. Satyanarayana & Dr. A. Narendra Babu)	(Dr. T. Satyanarayana)	(Dr. B. Poornaiah)	(Dr. Y. Amar Babu)

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mrs. B. Rajeswari
Course Name & Code : Linear Control Systems
L-T-P Structure : 2-2-0 Credits : 3
Program/Sem/Sec : B.Tech., ECE., VI-Sem., Section- B A.Y : 2021-22

PRE-REQUISITE: Signals and Systems, Electrical Circuits and Networks.

COURSE EDUCATIONAL OBJECTIVES (CEOs): This course provides mathematical models for representing different control systems and various steps in deriving transfer function. Various techniques for time and frequency domain analysis will also be learnt. Verifying for stability of systems using frequency domain analysis will also be studied. The concept of state variables for the analysis of continuous system will be introduced.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Summarize the fundamental concepts of control systems.
CO 2	Apply Laplace transform and state space techniques to model dynamic systems.
CO 3	Analyze the stability of the system in time and frequency domain.
CO 4	Design controllers and the state-space model to test the performance of systems.

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	-	-	-	-	-	-	-	-	-	1	-	-	1
CO2	3	3	2	2	-	-	-	-	-	-	-	2	-	-	2
CO3	2	3	1	1	-	-	-	-	-	-	-	2	-	2	3
CO4	3	3	3	3	-	-	-	-	-	-	-	3	-	-	3

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2** – Moderate (Medium), **3** - Substantial (High).

TEXT BOOKS:

T1 B. C. Kuo , "Automatic Control Systems" John wiley and son's ,8th edition, 2003..

T2 J. Nagrath and M. Gopal, "Control Systems Engineering", New Age International (P) Limited Publishers,2nd edition.

REFERENCE BOOKS:

R1 Katsuhiko Ogata, "Modern Control Engineering", Prentice Hall of India Pvt. Ltd., 3rd edition, 1998.

R2 Norman S. Nise, "Control Systems Engineering", 4th Edition, John Wiley, New Delhi.

R3 A. Nagoorkani, "Control Systems", *RBA Publications*, 2 nd edition, 2016.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Fundamentals of Control Systems & Representation of Control systems

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Course and COs	1	21-02-2022		TLM1	
2.	Introduction to control systems.	1	22-02-2022		TLM1	
3.	Classification of Control systems	1	23-02-2022		TLM1	
4.	Open loop and Closed loop control systems	1	24-02-2022		TLM1	
5.	Effects of Feedback	1	28-02-2022		TLM1	
6.	Block Diagrams, Reduction rules	1	02-03-2022		TLM1	
7.	Problems on Block diagram Reduction	1	03-03-2022		TLM3	
8.	Signal Flow Graph Terminology	1	07-03-2022		TLM1	
9.	**Tutorial-1**	1	08-03-2022		TLM1	
10.	SFG Reduction using Masons Gain Formula.	1	09-03-2022		TLM3	
11.	**Tutorial-2**	1	10-03-2022		TLM3	
No. of classes required to complete UNIT-I:**11**				No. of classes taken:		

UNIT-II: Mathematical Models & Time Response Analysis

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Translational mechanical Systems	1	14-03-2022		TLM1	
2.	Rotational Mechanical Systems	1	15-03-2022		TLM1	
3.	Analogous of Mechanical systems to electrical systems	1	16-03-2022		TLM1	
4.	Armature controlled DC Motor	1	17-03-2022		TLM1	
5.	Field controlled DC Motor	1	21-03-2022		TLM1	
6.	Synchro transmitter and receiver.	1	22-03-2022		TLM1	
7.	Standard test signals and Time response of first order systems	1	23-03-2022		TLM1,3	
8.	Response of second order system	1	24-03-2022		TLM1,3	
9.	**Tutorial-3**	1	28-03-2022		TLM3	
10.	Time domain specifications, Steady state errors and error constants	1	29-03-2022		TLM1,3	
11.	Effects of P, PD, PI and PID controllers	1	30-03-2022		TLM1	
12.	**Tutorial-4**	1	31-03-2022		TLM3	
No. of classes required to complete UNIT-II:**12**				No. of classes taken:		

UNIT-III: Stability in Time domain

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	The concept of stability	1	04-04-2022		TLM1	
2.	Routh's Hurwitz stability criterion, Qualitative and Conditional stability	1	06-04-2022		TLM1	

3.	**Tutorial-5**		07-04-2022		TLM3	
4.	Root Locus Technique	1	18-04-2022		TLM1	
5.	Construction of root loci	1	19-04-2022		TLM1,3	
6.	Limitations of Routh"s Hurwitz stability, Effects of adding poles to G(s)H(s) on the root loci.	2	20-04-2022 21-04-2022		TLM1,3	
7.	**Tutorial-6**	1	25-04-2022		TLM3	
8.	Effects of adding zeros to G(s)H(s) on the root loci.	1	26-04-2022		TLM3	
No. of classes required to complete UNIT-III:**10**				No. of classes taken:		

UNIT-IV : Frequency domain Analysis , Nyquist Plots & Compensators

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Frequency domain analysis	1	27-04-2022		TLM1	
2.	Frequency domain specifications	1	28-04-2022		TLM1	
3.	**Tutorial-7**	1	02-05-2022		TLM3	
4.	Bode plot , Stability Analysis from Bode Plots	1	04-05-2022		TLM1,3	
5.	**Tutorial-8**	1	05-05-2022		TLM3	
6.	Polar Plots, Nyquist Plots	1	09-05-2022		TLM1,3	
7.	Procedure to plot the Nyquist Plots	1	10-05-2022		TLM1,3	
8.	Determination of stability from Polar plots and Nyquist Plots	1	11-05-2022		TLM1,3	
9.	Lead compensator, Lag compensator, Lead-Lag compensator.	1	12-05-2022		TLM1	
10.	**Tutorial-9**	1	16-05-2022		TLM3	
No. of classes required to complete UNIT-IV:**10**				No. of classes taken:		

UNIT-V : State Space Analysis of Continuous Systems:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Concepts of state, state variables and state model	1	17-05-2022		TLM1	
2.	Derivation of state models from transfer function.	1	18-05-2022		TLM1,3	
3.	Derivations of transfer function from state models.	1	19-05-2022		TLM1,3	
4.	**Tutorial-10**	1	23-05-2022		TLM3	
5.	Solution of state equations	1	24-05-2022		TLM1	
6.	State Transition Matrix	1	25-05-2022		TLM1,3	
7.	Computation of state transition matrix using Laplace transformation method	1	26-05-2022		TLM1,3	
8.	**Tutorial-11**	1	30-05-2022		TLM3	
9.	Concept of Controllability & Observability	2	31-05-2022 01-06-2022		TLM1,3	
No. of classes required to complete UNIT-V:**10**				No. of classes taken:		

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Gyrator-Gear Differentiator	1	02-06-2022		TLM1	

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1	21-02-2022	09-04-2022	7W
I Mid Examinations	11-04-2022	16-04-2022	1W
II Phase of Instructions	18-04-2022	04-06-2022	7W
II Mid Examinations	06-05-2022	11-06-2022	1W
Preparation and Practicals	13-06-2022	18-06-2022	1W
Semester End Examinations	20-06-2022	02-07-2022	2W

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	Marks
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
I-Mid Examination (Units-I & II)	M1=20
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=20
II-Quiz Examination (Units-III, IV & V)	Q2=10
Attendance	B=5
Assignment Marks = Best Four Average of A1, A2, A3, A4, A5	A=5
Mid Marks =75% of Max(M1,M2)+25% of Min(M1,M2)	M=20
Quiz Marks =75% of Max(Q1,Q2)+25% of Min(Q1,Q2)	B=10
Cumulative Internal Examination (CIE) : A+B+M+Q	40
Semester End Examination (SEE)	60
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	**Communication:** Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
PSO 2	**VLSI and Embedded Systems:** Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools
PSO 3	**Signal Processing:** Apply the Signal processing techniques to synthesize and realize the issues related to real time applications

Course Instructor	Course Coordinator	Module Coordinator	HOD
B.Rajeswari	B.Rajeswari	Dr. G L N Murthy	Dr. Y Amar Babu

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUTPART-A

PROGRAM : B.Tech. VI-Sem., ECE-B
ACADEMIC YEAR : 2021-22
COURSE NAME & CODE : **JAVA PROGRAMMING – 17CI07**
L-T-P STRUCTURE : 3-0-0
COURSE CREDITS 3
COURSE INSTRUCTOR : **Mr.A.Gopi Suresh**
COURSE COORDINATOR : **S. Nagarjuna Reddy**
PRE-REQUISITE: Knowledge of Procedural Programming Language
COURSE OBJECTIVE:

Concentrates on the methodological and technical aspects of software design and programming based on OOP. Acquire the basic knowledge and skills necessary to implement object-oriented programming techniques in software development through JAVA. Know about the importance of GUI based applications and the development of those Applications through JAVA. Get sufficient knowledge to enter the job market related to web development.

COURSE OUTCOMES (CO)

At the end of the course, the student will be able to

CO1: Identify Object Oriented concepts through constructs of JAVA.
CO2: Understand the importance of Packages, Interfaces and implement Exception handlingmechanisms.
CO3: Explore the concept of Multithreading and Develop GUI based applications using applets.
CO4: Design GUI based applications using AWT controls and explore the concept of Eventhandling.
CO5: Illustrate the basic concepts of JDBC and networking.

COURSE ARTICULATION MATRIX (Correlation between Cos &POs, PSOs):

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	1	2	-	-	-	-	-	-	-	-	1	3	-	1
CO2	3	3	2	-	1	-	-	-	-	-	-	1	3	-	1
CO3	3	2	3	-	1	-	-	-	-	-	-	1	3	-	1
CO4	3	2	3	-	1	-	-	-	-	-	-	1	3	-	1
CO5	3	2	2	-	1	-	-	-	-	-	-	1	3	3	1

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'1-** Slight (Low), **2 -** Moderate(Medium), **3 -** Substantial (High).

TEXT BOOKS:

T1 Herbert Schildt, "Java: The complete Reference", TMH Publications, 7th edition, 2006.

REFERENCE BOOKS:

R1 Dr.R.Nageswara Rao, "Core JAVA: An Integrated Approach", Dreamtech Press, 1st Edition, 2008.

R2 E.Balaguruswamy, "Programming with JAVA", TMH Publications, 2nd Edition, 2000.

R3 Patrick Niemeyer & Jonathan Knudsen, "Learning Java", O'REILLY Publications, 3rd Edition, 2005.

R4 Benjamin J Evans & David Flanagan, "Java-in a Nutshell – A desktop quick reference", O'REILLY Publications, 6th Edition, 2014.

R5 David Flanagan, "Java Examples in a nutshell – A Tutorial companion to java in a nutshell", O'REILLY Publications, 3rd Edition, 2004.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction to Java Language and Classes

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Drawbacks of POP, Object Oriented paradigm	1	21-02-2022		TLM1/ TLM2	
2.	OOP Concept	1	23-02-2022		TLM1/ TLM2	
3.	Java Buzzwords, Byte Code, Simple types	1	25-02-2022		TLM1/ TLM2	
4.	Arrays, Type Conversion and Casting	1	28-02-2022		TLM1/ TLM2	
5.	Simple Java Programs , Class Fundamentals	1	02-03-2022		TLM1/ TLM2/ TLM5	
6.	Declaring Objects, Access Control and recursion, Constructors	1	04-02-2022		TLM1/ TLM2/ TLM5	
7.	Garbage Collection, Programson String and String Buffer classes and Wrapper classes	1	07-03-2022		TLM1/ TLM2/ TLM5	
8.	Tutorial – 1 / Assignment - 1	1	09-03-2022		TLM3 / TLM6	
No. of classes required to complete UNIT-I		8		No. of classes taken:		

UNIT-II: Inheritance & Polymorphism, Packages and Interfaces

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
9.	Inheritance Basics, Super Keyword, Multilevel Hierarchy,	1	11-03-2022		TLM1/ TLM2	
10.	Method Overloading & Method Overriding	1	14-03-2022		TLM1/ TLM2	
11.	Dynamic method dispatch, Abstract class, Object class and final keyword.	1	16-03-2022		TLM1/ TLM2	
12.	Package definition, Accessing package, understanding CLASSPATH	1	18-03-2022		TLM1/ TLM2	
13.	Importing Packages, java.util package	1	21-03-2022		TLM1/ TLM2	
14.	Defining, Implementing and Applying Interfaces	1	23-03-2022		TLM1/ TLM2	
15.	Variables in interface and extending interfaces	1	25-03-2022		TLM1/ TLM2	
16.	Differences between classes and interfaces	1	28-03-2022		TLM1/ TLM2	

17.	Tutorial – 2 / Assignment - 2	1	30-03-2022		**TLM3 / TLM6**	
No. of classes required to complete UNIT-II		9		No. of classes taken:		

UNIT-III: Exception Handling, Multithreading

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
18.	Exception Handling Fundamentals, Exception types,	1	01-04-2022		**TLM1/ TLM2**	
19.	Usage of try & catch , throws and finally	1	04-04-2022		**TLM1/ TLM5**	
20.	Java Built-in Exceptions	1	06-04-2022		**TLM1/ TLM2**	
21.	Differences between multi-threading and muti-tasking.	1	08-04-2022		**TLM1/ TLM2**	
22.	Java thread model Creating thread	1	18-04-2022		**TLM1/ TLM2**	
23.	Multiple threads	1	20-04-2022		**TLM1/ TLM2**	
24.	Synchronizing threads	1	22-04-2022		**TLM1/ TLM2**	
25.	Tutorial – 3 / Assignment - 3	1	25-04-2022		**TLM3 / TLM6**	
No. of classes required to complete UNIT-III		08		No. of classes taken:		

UNIT-IV: Applet class and Event Handling

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
26.	Concepts of Applets, Differences between Applets and Applications	1	27-04-2022		**TLM1/ TLM2**	
27.	Applet Architecture, skeleton, and creation.	1	29-04-2022		**TLM1/ TLM2**	
28.	Passing parameters to applets and working with graphics class.	1	02-05-2022		**TLM1/ TLM2**	
29.	Event handling mechanisms, Events and Event sources.	1	04-05-2022		**TLM1/ TLM2**	
30.	Event class, Listener interface, Delegation event model.	1	06-05-2022		**TLM1/ TLM2**	
31.	Keyboard and Mouse Events, Adapter class, Inner class.	1	09-05-2022		**TLM1/ TLM2**	
32.	Tutorial – 4 / Assignment - 4	1	11-05-2022		**TLM3 / TLM6**	
No. of classes required to complete UNIT-IV		07		No. of classes taken:		

UNIT-V: AWT Controls and Introduction to Swings

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
33.	Label, button, Scrollbars, Text Components	1	13-05-2022		**TLM1/ TLM2/ TLM5**	
34.	Check Box, Check Box groups, choices, controls, lists	1	16-05-2022		**TLM1/ TLM2/ TLM5**	
35.	Scrollbar, Text field, Layout Managers – border, grid, flow	1	18-05-2022		**TLM1/ TLM2/ TLM5**	
36.	Introduction to swing, Key features, Limitations of AWT	1	20-05-2022		**TLM1/ TLM2/ TLM5**	

37.	Components and Containers, Swing packages.	1	23-05-2022		**TLM1/ TLM2/ TLM5**	
38.	Creating Swing applet, JApplet class, JComponents – Labels, Text fields, buttons	1	25-05-2022		**TLM1/ TLM2/ TLM5**	
39.	Jbutton class, Tabbed Panes, Scroll Panes, Tables, Tutorial – 5 / Assignment - 5	1	27-05-2022		**TLM1/ TLM2/ TLM5**	
No. of classes required to complete UNIT-V		07		No. of classes taken:		

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
40.	Differences Between C,C++ & Java	1	30-05-2022		**TLM1**	
41.	Differences Between C,C++ & Java	1	03-06-2022		**TLM1**	

Teaching Learning Methods					
TLM1	Chalk and Talk	**TLM4**	Problem Solving	**TLM7**	Seminars or GD
TLM2	PPT	**TLM5**	Programming	**TLM8**	Lab Demo
TLM3	Tutorial	**TLM6**	Assignment or Quiz	**TLM9**	Case Study

PART-C

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1	21-02-2022	09-04-2022	7W
I Mid Examinations	11-04-2022	16-04-2022	1W
II Phase of Instructions	18-04-2022	04-06-2022	7W
II Mid Examinations	06-05-2022	11-06-2022	1W
Preparation and Practicals	13-06-2022	18-06-2022	1W
Semester End Examinations	20-06-2022	02-07-2022	2W

EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment –1	1	A1=5
Assignment –2	2	A2=5
Quiz-1	1,2	B1=10
I-Mid Examination	1,2	C1=20
Assignment –3	3	A3=5
Assignment –4	4	A4=5
Assignment --5	5	A5=5
Quiz-2	3,4,5	B2=10
II-Mid Examination	3,4,5	C2=20
Evaluation of Assignment Marks: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Quiz Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=10
Evaluation of Mid Marks: C=75% of Max(C1,C2)+25% of Min(C1,C2)	1,2,3,4,5	C=20
Attendance	-	D=5
Cumulative Internal Examination : A+B+C+D	**1,2,3,4,5**	**A+B+C+D=40**
Semester End Examinations	**1,2,3,4,5**	**E=60**
Total Marks: A+B+C+D+E	**1,2,3,4,5**	**100**

PART-D

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

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

PROGRAM SPECIFIC OUTCOMES(PSOs):

PSO1	**Programming Paradigms:** To inculcate algorithmic thinking, formulation techniques and visualization, leading toproblem solving skills using different programming paradigms.
PSO2	**Data Engineering:** To inculcate an ability to Analyse, Design and implement data driven applications intothe students.
PSO3	**Software Engineering:** Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products

Course Instructor	Course Coordinator	Module Coordinator	HOD
A.Gopi Suresh	S. Nagarjuna Reddy	Dr. Y.Vijay Bhaskar Reddy	Dr. D.Veeraiah

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr E V Krishna Rao
Course Name & Code : Antennas and Wave Propagation &17EC21
L-T-P Structure : 2-2-0 Credits: 3
Program/Sem/Sec : B.Tech., ECE., VI-Sem., Sections- B A.Y :2021-22

Pre-Requisites: EM Fields and Waves, Transmission Lines and Waveguides

Course Objectives: This course provides the knowledge on Antennas and Radiation fundamentals. The course will expose different types of Antennas and their applications. The course also gives the complete information regarding Propagation of Radio wave in atmosphere.

Course Outcomes (COs): At the end of the course, students are able to

CO1	**Understand** radiation mechanism, antenna properties, ground, space, and sky wave propagations
CO2	**Analyze** wire antenna, ground, space, and sky wave propagation mechanism for communication purpose and synthesize various Antenna Arrays
CO3	**Design** HF, VHF and UHF Antennas
CO4	**Evaluate** and measure antenna parameters radiation pattern, Gain, Impedance, Radiation resistance and Aperture efficiency

Course Articulation Matrix (Correlation between COs &POs, PSOs):

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	1	2	-	-	-	-	-	-	-	-	-	1	1	-	-
CO2	2	3	1	-	-	-	-	-	-	-	-	3	2	-	-
CO3	3	2	3	-	-	-	-	-	-	-	-	2	3	-	-
CO4	3	2	3	-	-	-	-	-	-	-	-	1	2	-	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1-Slight(Low), **2**-Moderate(Medium), **3**-Substantial (High).

TEXT BOOK(S):

T1 Constantine A. Balanis, "Antenna Theory: Analysis and Design", John Wiley & sons Publishers,2nd Edition

T2 K.D. Prasad, Antennas and Wave Propagation, Satya Prakashan Publishers, New Delhi.

REFERENCE BOOK(S):

R1 G.S.N Raju, "Antennas and Wave Propagation", Pearson Education Publishers.

R2 Jordan and Balmain, Electromagnetic fields and Radiating systems, Pearson Education. Publishers.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-B

UNIT-I: Radiation and Antenna fundamentals:

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Course and COs	1	23.02.2022		TLM1	
2.	Introduction to Unit-I	1	24.02.2022		TLM1	
3.	Radiation mechanism	1	25.02.2022		TLM1	
4.	Antenna parameters-radiation pattern	1	26.02.2022		TLM2	
5.	Radiation intensity, directivity, gain, Radiation efficiency,	1	02.03.2022		TLM1	
6.	Beam width, beam area, Effective aperture, effective length	1	03.03.2022		TLM1	
7.	Network theorems-antennas	1	04.03.2022		TLM1	
8.	**Tutorial-1**	1	05.03.2022		TLM3	
9.	Potential functions-heuristic approach, Maxwells Equation approach	1	09.03.2022		TLM1	
10.	Potential functions for sinusoidal oscillations, Alternating current element-Analysis	1	10.03.2022		TLM1	
11.	Half wave dipole and quarter wave mono pole antennas-Analysis	1	11.03.2022		TLM2	
12.	Radiation from quarter wave mono pole and Half wave dipole antennas	1	16.03.2022		TLM2	
13.	Radiation resistance of quarter wave mono pole and Half wave dipole antennas	1	17.03.2022		TLM1	
14.	**Tutorial-2**	1	19.03.2022		TLM3	
No. of classes required to complete UNIT-I : 14			No. of classes taken :			

UNIT-II: Antennas Array Analysis:

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
15.	Antenna arrays-types	1	23.04.2022		TLM1	
16.	Array of two-point sources	1	24.03.2022		TLM1	
17.	Broad side array	1	25.03.2022		TLM1	
18.	N element Broad side array	1	26.03.2022		TLM1	
19.	End fire array	1	30.03.2022		TLM1 TLM1	
20.	**Tutorial-3**	1	31.03.2022		TLM3	
21.	Binomial array, pattern multiplication	1	01.04.2022		TLM1	
22.	Synthesis methods- Chebyshev Method.	1	06.04.2022		TLM1	
23.	Schelnuoff Polynomial Method	1	07.04.2022		TLM1	
24.	Fourier Transform Method, Woodward-Lawson Method	1	08.04.2022		TLM2	
25.	**Tutorial-4**	1	09.04.2022		TLM3	
No. of classes required to complete UNIT-II		**11**	No. of classes taken:			

UNIT-III: HF, VHF and UHF Antennas:

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
26.	Resonant vs Non resonant antennas	1	20.04.2022		TLM1	
27.	V, Inverted V antennas	1	21.04.2022		TLM1	
28.	Rhombic antenna	1	22.04.2022		TLM1	
29.	**Tutorial-5**	1	23.04.2022		TLM3	
30.	Folded dipole antenna	1	27.04.2022		TLM1	
31.	Yagi Uda antenna Log periodic antenna	1	28.04.2022		TLM1	
32.	Helical antenna	1	29.04.2022		TLM1	
33.	Loop antenna	1	30.04.2022		TLM1	
34.	**Tutorial-6**	1	04.05.2022		TLM3	
No. of classes required to complete UNIT-III : 09				No. of classes taken:		

UNIT-IV: Microwave Antennas & Antenna Measurements:

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
35.	Corner Reflector antennas	1	05.05.2022		TLM1	
36.	Parabolic reflector antenna	1	06.05.2022		TLM1	
37.	Horn antenna	1	07.05.2022		TLM2	
38.	Lens antenna	1	11.05.2022		TLM1	
39.	**Tutorial- 7**	1	12.05.2022		TLM3	
40.	Measurement of gain, Measurement of directional pattern	1	13.05.2022		TLM1	
41.	Measurement of impedance, beam width	1	14.05.2022		TLM1	
42.	Measurement of radiation resistance, effective aperture, aperture efficiency, directivity	1	18.05.2022		TLM1	
43.	**Tutorial-8**	1	19.05.2022		TLM3	
No. of classes required to complete UNIT-IV: 09			No. of classes taken:			

UNIT-V: Wave Propagation:

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
44.	Ground wave propagation	1	20.05.2022		TLM1	
45.	Sky wave propagation-mechanism	1	21.05.2022		TLM1 TLM1	
46.	Layers of Ionosphere	1	25.05.2022		TLM1	
47.	**Tutorial-9**	1	26.05.2022		TLM3	
48.	Critical frequency, MUF, OWF, LUHF	1	27.06.2022		TLM1	
49.	Skip distance, virtual height, ionosphere abnormalities	1	28.05.2022		TLM1	

50.	Space wave propagation	1	01.06.2022		TLM1	
51.	Field strength, LOS Duct propagation	1	02.06.2022		TLM1	
52.	**Tutorial-10**	1	03.06.2022		TLM3	
No. of classes required to complete UNIT-V :09			No. of classes taken			

Contents beyond the Syllabus

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Design of microstrip patch Antennas	1	04.06.2022		TLM2	

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS:

Evaluation Task	Marks
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
I-Mid Examination (Units-I & II)	M1=20
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=20
II-Quiz Examination (Units-III, IV & V)	Q2=10
Mid Marks =75% of Max(M1,M2) + 25% of Min(M1,M2)	M=20
Quiz Marks =75% of Max(Q1,Q2) + 25% of Min(Q1,Q2)	Q=10
Assignment Marks = Average of Best Four of A1, A2, A3, A4, A5	A=5
Attendance	B=5
Cumulative Internal Examination (CIE) : M+Q+A+B	40
Semester End Examination (SEE)	60
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1: **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO 2: **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO 3: **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO 4: **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5: **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

PO 6: **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice

PO 7: **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO 8: **Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9: **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10: **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 11: **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12: **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1: **Communication:** Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.

PSO 2: **VLSI and Embedded Systems:** Design and Analyze Analog and Digital Electronic Circuits or systems and implement real time applications in the field of VLSI and Embedded Systems using relevant tools

PSO 3: **Signal Processing:** Apply the Signal processing techniques to synthesize and realize the issues related to real time applications

Date:

Course Instructor	Course Coordinator	Module Coordinator	HOD
Dr E V Krishna Rao	Dr. E.V. Krishna Rao	Dr. Y.S.V.Raman	Dr. Y. Amar Babu

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mrs. K.Balavani
Course Name & Code : Microprocessors and Microcontrollers – 17EC22
L-T-P Structure : 3-0-0 Credits : 3
Program/Sem/Sec : B.Tech., ECE., VI-Sem., Section-B A.Y : 2021-22

PRE-REQUISITES: Digital Circuits, Computer Organization.

COURSE EDUCATIONAL OBJECTIVES (CEOs): In this course student will learn about the Architecture of 8086 Microprocessor and 8051 Microcontroller and their Assembly Language Programming, interfacing Memory and Various Peripherals with 8086 Microprocessor/8051 Microcontroller and concepts of Interrupts and Serial Communication in reference to 8086.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	**Understand** the architecture and operation of 8086 Microprocessor & 8051 Microcontroller.
CO 2	**Apply** the instructions of 8086/8051 for various applications.
CO 3	**Analyze** the operation of peripherals and devices for different applications.
CO 4	**Design** a system by interfacing memory, peripherals and I/O devices to 8086/8051

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	-	-	-	-	-	-	-	-	-	1	-	1	-
CO2	3	3	1	-	-	-	-	-	-	-	-	2	-	2	-
CO3	2	3	3	-	-	-	-	-	-	-	-	3	-	3	-
CO4	3	3	3	-	-	-	-	-	-	-	-	3	-	3	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2** – Moderate (Medium), **3** - Substantial (High).

TEXT BOOKS:

T1 Douglas V. Hall, "Micro Processors & Interfacing", TMH, 2007.
T2 A. K. Ray and K. M. Bhurchandi, "Advanced Microprocessor And Peripherals", 2nd Edition TMH Publishers.
T3 Muhammad Ali Mazidi, Janice Gillispie Mazidi, Rolin D. Mckinlay "Microcontrollers and Embedded System", Pearson Education Publishers, 2nd Edition

REFERENCE BOOKS:

R1 Raj Kamal, "Microcontrollers Architecture, Programming, Interfacing and System Design", Pearson Education Publishers.
R2 J. K. Uffenbeck, "The 8088 and 8086 Micro Processors", PHI, 4th Edition, 2003.
R3 Ajay Deshmukh, "Micro Controllers-Theory and Applications", Tata McGraw Hill Publishers.
R4 Kenneth J. Ayala, "The 8051 Micro Controller", Cengage Learning Publishers, 3rd Edition, 2000.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section - B

UNIT-I: Microprocessor Architecture, Instruction Set:

S. No.	Topics	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Microprocessors	1	21/02/22		**TLM1**	
2.	Types of µprocessors, features & comparison, µprocessor- Architecture	2	24/02/22		**TLM1&2**	
3.	General purpose registers and Special functions	1	26/02/22		**TLM1**	
4.	Flag register and function of Flags, Addressing modes.	1	28/02/22		**TLM1**	
5.	Instruction set of 8086	2	05/03/22		**TLM1&2**	
6.	Assembly language programs involving logical, Branch and Call instructions.	2	10/03/22		**TLM1**	
7.	Assembly language programs for Sorting and Arithmetic Expressions	1	12/03/22		**TLM1**	
8.	String manipulation Instructions	1	14/03/22		**TLM1**	
9.	Assembler directives, Procedures and macros	1	17/03/22		**TLM1&2**	
10.	**Assignment**	1	19/03/22			
No. of classes required to complete UNIT-I:		**13**	No. of classes taken:			

UNIT-II: 8086 Memory and I/O Interfacing:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Pin diagram of 8086	1	21/03/22		**TLM1&2**	
2.	Minimum mode of operation	1	24/03/22		**TLM1&2**	
3.	Maximum mode of operation	1	26/03/22		**TLM1&2**	
4.	Timing diagram.	1	28/03/22		**TLM1&2**	
5.	Memory interfacing to 8086	1	31/03/22		**TLM1&2**	
6.	Static RAM , EPROM and I/O interfacing to 8086	1	04/04/22		**TLM1&2**	
7.	Interrupt structure of 8086,Interrupt service routines and Interrupt Vector table	1	07/04/22		**TLM1&2**	
8.	**Assignment, Revision**	1	09/04/22			
No. of classes required to complete UNIT-II:		**08**	No. of classes taken:			

UNIT-III: Peripherals and Devices:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	DMA Controller 8237	1	18/04/22		**TLM2**	
2.	Interrupt Controller 8259	1	21/04/22		**TLM2**	
3.	Cascading of 8259	1	23/04/22		**TLM2**	
4.	USART 8251	1	25/04/22		**TLM2**	
5.	8255 PPI Modes of operation	1	28/04/22		**TLM2**	
6.	Keyboard interfacing	1	30/04/22		**TLM2**	
7.	D/A & A/D Converter interfacing	1	02/05/22		**TLM2**	
8.	**Assignment, Revision**	1	05/05/22			
No. of classes required to complete UNIT-III:		**08**	No. of classes taken:			

UNIT-IV : Microcontroller:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	8051 µcontroller Architecture	1	07/05/22		**TLM1&2**	
2.	8051Pin Diagram	1	09/05/22		**TLM1&2**	
3.	Addressing modes	1	12/05/22		**TLM1&2**	
4.	8051 Instruction Set	1	14/05/22		**TLM1&2**	
5.	8051 Programs	1	16/05/22		**TLM1&2**	
6.	8051 Memory and I/O interfacing	1	19/05/22		**TLM1&2**	
7.	**Assignment, Revision**	1	21/05/22			
No. of classes required to complete UNIT-IV:		**08**	No. of classes taken:			

UNIT-V : 8051 Interfacing:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Modes of timer operation	2	26/05/22		**TLM1&2**	
2.	Serial port operation, Interrupt structure of 8051	1	28/05/22		**TLM1&2**	
3.	Interfacing of Seven segment Displays	1	30/05/22		**TLM1&2**	
4.	Stepper Motor and Serial/Parallel Printer interfacing	1	01/06/22		**TLM1&2**	
5.	**Assignment**	1	03/06/22			
6.	**Revision**	1	04/06/22			
No. of classes required to complete UNIT-V:		**07**	No. of classes taken:			

Contents beyond the Syllabus

S. No.	Topics	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Advanced Microprocessors - 80286, 80836	1	09-04-2022		**TLM1**	

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	**Marks**
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
I-Mid Examination (Units-I & II)	M1=20
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=20
II-Quiz Examination (Units-III, IV & V)	Q2=10
Mid Marks =75% of Max(M1, M2)+25% of Min(M1, M2)	M=20
Quiz Marks =75% of Max(Q1, Q2)+25% of Min(Q1, Q2)	Q=10
Assignment Marks = Average of Best Four of A1, A2, A3, A4, A5	A=5
Attendance	B=5
Cumulative Internal Examination (CIE) : M+Q+ A+B	40
Semester End Examination (SEE)	60
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	**Communication:** Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
PSO 2	**VLSI and Embedded Systems:** Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools
PSO 3	**Signal Processing:** Apply the Signal processing techniques to synthesize and realize the issues related to real time applications

Date: 04-03-2022

Course Instructor	Course Coordinator	Module Coordinator	HOD
Mrs.K. Balavani	K. Sasi Bhushan	Dr. P. Lachi Reddy	Dr. Amar Babu

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr. Y.S.V.Raman
Course Name & Code : Cellular and Mobile Communications
L-T-P Structure : 3-0-0 Credits : 3
Program/Sem/Sec : B.Tech., ECE., VI-Sem., Section- B A.Y : 2021-22
PRE-REQUISITE: Analog and Digital Communication Systems, Antennas.

COURSE EDUCATIONAL OBJECTIVES (CEOs): This course provides the knowledge on basic operation of cellular systems, various techniques to improve the capacity of a cellular system, types of fading and its effects on the radio signal. This course will give an idea about various methods to reduce co-channel and adjacent channel interference. It also provides brief knowledge of Hand-off mechanism, multiple access techniques and digital cellular systems.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	**Understand** the concepts of cellular systems, interferences, frequency reuse, Handoff mechanism, frequency management and channel assignment strategies in cellular systems.
CO 2	**Apply** time ,frequency and code division multiple access techniques to digital cellular systems
CO 3	**Evaluate** co-channel and non co-channel interferences in cellular systems
CO 4	**Analyze** the radio propagation losses at cell site and mobile antennas

COURSE ARTICULATION MATRIX(Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	1	-	-	-	-	-	-	-	-	1	2	-	-
CO2	3	2	2	-	-	-	-	-	-	-	-	1	2	-	-
CO3	2	2	3	-	-	-	-	-	-	-	-	2	3	-	-
CO4	1	3	1	-	-	1	-	-	-	-	-	1	3	-	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2** – Moderate (Medium), **3** - Substantial (High).

TEXT BOOKS:

T1 Mobile Cellular Telecommunications by William.C.Y. Lee, Tata McGraw Hill, 2nd Edition, 1995.

T2 Wireless Communications by Theodore. S. Rappaport, Pearson education, 2nd Edition, 2002.

REFERENCE BOOKS:

R1 Cellular Communications Explained From Basics to 3G by Ian Poole, Elsevier Ltd, 2006.

R2 Wireless and Cellular Telecommunications by William.C.Y. Lee, McGraw Hill, 3rd Edition, 2006.

R3 Mobile Cellular Communication by G Sasibhushana Rao, Pearson Education, 1st Edition, 2012.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction to Cellular Systems- design and capacity

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Subject & course outcomes	1	22-02-22			
2.	Basic Cellular systems- analog, digital	1	25-02-22			
3.	Operation of a Cellular system-telephone call procedure	1	26-02-22			
4.	Operation of cellular systems	1	1-03-22			
5.	Operational channels, performance criteria	1	4-03-22			
6.	Uniqueness of mobile radio environment	1	5-03-22			
7.	Hexagonal shaped cells, Frequency Reuse, Frequency Reuse distance	1	8-03-22			
8.	Concept of frequency Reuse channels	1	11-03-22			
9.	Co-channel-Interference Reduction Factor, desired C/I from a normal case in a omni directional Antenna system	1	12-03-22			
10.	Cell splitting, sectoring, microcell concept **Assignement-01**	1	15-03-22			
No. of classes required to complete UNIT-I: 10				No. of classes taken:		

UNIT-II: Mobile Radio Propagation and antennas

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Basics of mobile radio propagation mechanisms	1	18-03-22			
2.	Free space propagation Model	1	19-03-22			
3.	Link budget design using Path Loss Models	1	22-03-22			
4.	Outdoor Propagation models, Indoor Propagation models	1	25-03-22			
5.	Small scale multipath propagation	1	26-03-22			
6.	Factors influencing fading, types of small scale fading	1	28-03-22			
7.	Cell site antenna height, Omni directional antennas	1	1-04-22			
8.	directional antennas for interference reduction	1	2-04-22			
9.	diversity antennas, umbrella pattern antennas, Minimum separation of cell site receiving antennas	1	4-04-22 8-04-22			
10.	Mobile high gain antennas, Concept of sum and difference pattern. **Assignment-2**	1	9-04-22			
No. of classes required to complete UNIT-II: 10				No. of classes taken:		

UNIT-III: Interference

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Co-Channel Interference	1	19-04-22			
2.	Procedure to find nearest neighbors of a particular cell	1	22-04-22			
3.	Real time Co-Channel interference	1	23-04-22			
4.	Determination of Co-Channel interference area	1	25-04-22			
5.	Design of Antenna system	1	29-04-22			
6.	Impact on co-channel interference by lowering the antenna height	1	30-04-22			
7.	Non-co-channel interference	1	3-05-22			
8.	Different types of non co-channel interferences	1	6-05-22			
9.	Interference between systems **Assignment-3**	1	7-05-22			
No. of classes required to complete UNIT-III: 09				No. of classes taken:		

UNIT-IV : Frequency Management, Channel Assignment, Handoff and Dropped Calls

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to frequency and channel management-Numbering and grouping,	1	9-05-22			
2.	Setup channels Access channels, paging channels	1	13-05-22			
3.	Channel assignments to cell sites and mobile units	1	14-05-22			
4.	Channel sharing and borrowing	1	14-05-22			
5.	Sectorization, overlaid cells	1	17-05-22			
6.	Non-fixed channel assignment.	1	17-05-22			
7.	Types of handoff, handoff invitation, delaying Handoff	1	20-05-22			
8.	Forced handoff, mobile assigned handoff, Intersystem handoff	1	21-05-22			
9.	Dropped call rates And their evaluation **Assignment-4**	1	21-05-22			
No. of classes required to complete UNIT-IV: 09				No. of classes taken:		

UNIT-V : Multiple access Techniques and Digital Cellular Systems

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to multiple access techniques	1	24-05-22			
2.	FDMA	1	24-05-22			
3.	TDMA	1	28-05-22			
4.	CDMA	1	28-05-22			
5.	Comparison of performances of multiple access techniques CDMA,TDMA,FDMA	1	31-05-22			
6.	**2G**: Global System for Mobile: Important features of GSM,	1	31-05-22			
7.	advantages of GSM over analog system, architecture of GSM	1	03-06-22			
8.	**3G** Systems-Universal Mobile Telecommunications System; Wideband CDMA; CDMA 2000	1	03-06-22			
9.	Introduction to **4G & 5G** technologies **Assignment-5**	1	04-06-22			
No. of classes required to complete UNIT-V: 09				No. of classes taken:		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	**Marks**
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
I-Mid Examination (Units-I & II)	M1=20
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=20
II-Quiz Examination (Units-III, IV & V)	Q2=10
Attendance	B=5
Assignment Marks = Best Four Average of A1, A2, A3, A4, A5	A=5
Mid Marks =75% of Max(M1,M2)+25% of Min(M1,M2)	M=20
Quiz Marks =75% of Max(Q1,Q2)+25% of Min(Q1,Q2)	B=10
Cumulative Internal Examination (CIE) : A+B+M+Q	40
Semester End Examination (SEE)	60
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	**Communication:** Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
PSO 2	**VLSI and Embedded Systems:** Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools
PSO 3	**Signal Processing:** Apply the Signal processing techniques to synthesize and realize the issues related to real time applications

Course Instructor	Course Coordinator	Module Coordinator	HOD
(Dr. Y.S.V.Raman)	(Dr. Y.S.V. Raman)	(Dr. M.V. Sudhakar)	(Dr. Y. Amar Babu)

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (Autonomous)
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Department of ELECTRONICS & COMMUNICATION ENGINEERING

COURSE HANDOUT

Part-A

PROGRAM : B.Tech., VI-Sem., ECE,Section-B

ACADEMIC YEAR : 2021-22

COURSE NAME & CODE : **Industrial Engineering & Management** – 17MB80

L-T-P STRUCTURE : 3-0-0

COURSE CREDITS : 3

COURSE INSTRUCTOR : **Dr A Adisesha Reddy**

COURSE COORDINATOR : **Dr A Adisesha Reddy**

PRE-REQUISITE : Principles of management, Human resource management, Production management, Project management.

COURSE OBJECTIVE: To make students understand management, its principles, contribution to management, organization, and its basic issues and types

1. To make student s understand the concept of plant location and its factors and plant layout and types, method of production and work study importance
2. To understand the purpose and function of statistical quality control and material management techniques
3. To make students understand the concept of HRM and its functions
4. To make students understand PERT & CPM methods in effective project management and need of project crashing and its consequence on cost of project

COURSE OUTCOMES (CO)

CO1	Apply management principles to the particle situations to be in a position to know which type of business organization structure suits
CO2	Able to make decision making relating to the problems in operations and production
CO3	Able to improve quality of working through SQC techniques and to take effective decision making relating to reduce the investment in materials through better control
CO4	Able to manage people in working environment with the practices of HRM across corporate businesses
CO5	Able to use PERT & CPM techniques in effective project management to identify critical path and try to complete projects on time as well as reducing the project

COURSE ARTICULATION MATRIX (Correlation between COs&POs,PSOs):

COs	a	b	c	d	e	f	g	h	i	j	k	l	PSOa	PSOb	PSOc	PSOd
CO1	-	-	-	2	3	2	-	-	2	-	3	3	-	-	-	-
CO2	-	-	-	2	3	2	-	-	2	-	3	3	-	-	-	-
CO3	-	-	-	2	3	2	-	-	2	-	3	3	-	-	-	-
CO4	-	-	-	2	3	2	-	-	2	-	3	3	-	-	-	-
CO5	-	-	-	2	3	2	-	-	2	-	3	3	-	-	-	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight(Low), **2 -** Moderate(Medium), **3 -** Substantial (High).

BOS APPROVED TEXT BOOKS:

T1 Dr. A.R.Aryasri, Management Science, TMH, 10th edition, 2012

BOS APPROVED REFERENCE BOOKS:

R1 Koontz &weihrich -Essentials of management, TMH, 10th edition, 2015

R2 Stoner, Freeman, Gilbert, Management, 6th edition Pearson education, New Delhi, 2004

R3 Bernard W. Taylor-Introduction to Management Science Twelfth Edition
O.P. Khana, Industrial engineering and Management L.S.Srinath, PERT & CPM

Part-B

COURSE DELIVERY PLAN (LESSON PLAN)
UNIT – I: Introduction

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction to Subject, Course Outcomes, Management - Definition, Nature	01	21.02.2022		**TLM1**	CO1	T1	
2.	Importance of management Functions of Management	01	24.02.2022		**TLM1**	CO1	T1	
3.	Taylor's scientific management theory	01	26.02.2022		**TLM1**	CO1	T1	
4.	Fayal's principles of management	01	28.02.2022		**TLM1**	CO1	T1	
5.	Contribution of Elton mayo, Maslow	01	03.03.2022		**TLM1**	CO3	T1	
6.	Herzberg, Douglas MC Gregor,	01	05.03.2022		**TLM2**	CO1	T1	
7.	Basic Concepts of Organization - Authority, Responsibility Delegation of Authority, span of control, departmentation	01	07.03.2022		**TLM1**	CO1	T1	
8.	Organization structures (Line organization, Line a staff organization	01	17.03.2022		**TLM3**	CO1	T1	
9.	Functional organization, Committee organization, Matrix organization	01	19.03.2022		**TLM6**	CO1	T1	
No. of classes required to complete UNIT-I		09		No. of classes taken:				

UNIT – II Operations Management

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction to UNIT-II	01	21.03.2022		**TLM1**	CO2	T1	
2.	Plant location	01	24.03.2022		**TLM1**	CO2	T1	
3.	Factors influencing location	01	26.03.2022		**TLM2**	CO2	T1	

4.	Principles and types of plant layouts	01	28.03.2022		**TLM1**	CO2	T1	
5.	Methods of production Job, batch and mass production	01	31.03.2022		**TLM2**	CO2	T1	
6.	Work study, Basic procedure involved in method study	01	04.04.2022		**TLM1**	CO2	T1	
7.	Work measurement	01	09.04.2022		**TLM1**	CO2	T1	
No. of classes required to complete UNIT-II		07		No. of classes taken:				

UNIT-III: Statistical Quality Control & Materials Management

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction to UNIT-III,	01	04.04.2022		**TLM1**	CO3	T1	
2.	Statistical quality control	01	09.04.2022		**TLM1**	CO3	T1	
3.	Concept of Quality & Quality Control	01	18.04.2022		**TLM2**	CO3	T1	
4.	functions ,Meaningof SQC	01	19.04.2022		**TLM1**	CO3	T1	
5.	Variables and attributes		23.04.2022			CO3	T1	
6.	X chart, R Chart, C Chart, P Chart,(simple Problems)	01	25.04.2022		**TLM1**	CO3	T1	
7.	X chart, R Chart, C Chart, P Chart,(simple Problems)	01	26.04.2022		**TLM1**	CO3	T1	
8.	Acceptance sampling, Sampling plans	01	30.04.2022		**TLM1**	CO3	T1	
9.	Deming 's contribution to quality.	01	02.05.2022		**TLM1**	CO3	T1	
10.	Materials management - Meaning and objectives	01	07.05.2022		**TLM1**	CO3	T1	
11.	inventory control-Need for inventory control	01	09.05.2022		**TLM1**	CO3	T1	
12.	Purchase procedure	01	10.05.2022		**TLM1**	CO3	T1	
13.	Store records:EOQ, ABC analysis, Stock levels	01	14.05.2022		**TLM1**	CO3	T1	
No. of classes required to complete UNIT-III		13		No. of classes taken:				

UNIT IV – Human Resource management (HRM):

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction to UNIT-IV	01	14.05.2022		**TLM1**	CO2	T1	
2.	Concepts of HRM	01	16.05.2022		**TLM1**	CO2	T1	

3.	Basic functions of HR manager: Man power plarming	01	17.05.2022		**TLM1**	CO2	T1	
4.	Recruitment , Selection, Training and development	01	21.05.2022		**TLM1**	CO4	T1	
5.	Placement, Wage and salary administration	01	23.05.2022		**TLM1**	CO2	T1	
6.	Promotion, Transfers Separation, performance appraisal	01	24.05.2022		**TLM1**	CO4	T1	
7.	Job evaluation and merit rating	01	24.05.2022		**TLM2**	CO4	T1	
No. of classes required to complete UNIT-IV		07	28.05.2022		No. of classes taken:			

UNIT-V: Project management

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction to UNIT-V	01	28.05.2022		**TLM1**	CO5	T1	
2.	Early teclmiques in project management	01	30.05.2022		**TLM1**	CO5	T1	
3.	Network analysis: Programme evaluation and review teclmique (PERT),	01	31.05.2022		**TLM2**	CO5	T1	
4.	Critical path method (CPM), Identifying critical path	01	31.05.2022		**TLM1**	CO5	T1	
5.	Probability of completing project within given time	01	31.05.2022		**TLM1**	CO5	T1	
6.	Project cost analysis, project crashing	01	04.06.02022		**TLM3**	CO5	T1	
7.	simple problems	01	04.06.02022		TLM3	CO5	T1	
No. of classes required to complete UNIT-V		08			No. of classes taken:			

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM2	PPT	**TLM6**	Assignment or Quiz
TLM3	Tutorial	**TLM7**	Group Discussion/Project
TLM4	Demonstration (Lab/Field Visit)		

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions	21.02.2022	09.04.2022	7W
I Mid Examinations	11.04.2022	16.04.2022	1W
II Phase of Instructions	18.04.20222	04.06.2022	9W

II Mid Examinations	06.06.2022	11.06.2022	1W
Preparation and Practicals	13.06.2022	18.06.2022	1 W
Semester End Examinations	20.06.2022	02.07.2022	2W

Part - C

EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Cumulative Internal Examination : A+B	1,2,3,4,5	A+B=25
Semester End Examinations	1,2,3,4,5	C=75
Total Marks: A+B+C	1,2,3,4,5	100

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

- PEO1: To Attain a solid foundation in Electronics & Communication Engineering fundamentals with an attitude to pursue continuing education.
- PEO2: To Function professionally in the rapidly changing world with advances in technology.
- PEO3: To Contribute to the needs of the society in solving technical problems using Electronics & Communication Engineering principles, tools and practices.
- PEO4: To Exercise leadership qualities, at levels appropriate to their experience, which addresses issues in a responsive, ethical, and innovative manner**.**

PROGRAMME OUTCOMES (POs)

Engineering Graduates will be able to

Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

Problem analysis: Identify, formulate, review research literature, and analyze complex engineeringproblems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

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.

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.

Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools includingprediction and modeling to complex engineering activities with an understanding of the limitations.

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.

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.

Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

Communication: Communicate effectively on complex engineering activities withthe engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

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 andleader in a team, to manage projects and in multidisciplinary environments.

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 OUTCOMES (PSOs):

PSO1: Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
PSO2: Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools.
PSO3: Apply the Signal processing techniques to synthesize and realize the issues related to real time applications.

Dr A Adisesha Reddy	Dr A Adisesha Reddy	Dr. A ADISESHA REDDY	Dr. A ADISESHA REDDY
Course Instructor	Course Coordinator	Module Coordinator	HOD

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L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

DEPARTMENT OF Electronics & Communication Engineering

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr.M.V.Sudhakar
Course Name & Code : Telecommunication Switching Systems and Networks-17EC91
L-T-P Structure : 3-0-0 Credits : 3
Program/Sem/Sec : B.Tech., ECE., VI-Sem., Section- B A.Y : 2021-22

PRE-REQUISITE: Analog Communications, Digital Communications

COURSE EDUCATIONAL OBJECTIVES (CEOs): This course provide the knowledge on basics of Telecommunication switching system, Networks, Traffic Engineering and also fundamentals of data communication networks.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	**Understand** the concepts of switching systems, network parameters in telecommunications systems
CO 2	**Analyze** Telephone network parameters & Data Network architectures, Switching techniques and higher data rates telecommunication techniques.
CO 3	**Apply** telephone & data network parameters to maintain smooth traffic in networks.
CO 4	**Evaluate** the performance of Switching systems, Data communication networks and higher data rate systems.

COURSE ARTICULATION MATRIX(Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	-	-	-	-	-	-	-	-	-	1	1	-	-
CO2	2	3	-	-	-	-	-	-	-	-	-	2	2	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	2	2	-	-
CO4	2	3	-	-	-	-	-	-	-	-	-	2	2	-	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

TEXT BOOKS:

T1 Viswanathan. T, Telecommunication Switching System and Networks, Prentice Hall of India Ltd., 1994.
T2 Behrouz. A. Forouzan, Data Communication and Networking, Fourth Edition, Tata McGraw-Hill, New Delhi, 2006.

REFERENCE BOOKS:

R1 J. E. Flood, Telecommunication Switching Traffic and Networks, Pearson Education
R2 L. S. Lawton, Integrated Digital Networks, Galgotta Publication Pvt., Ltd., New Delhi, 1996.
R3 Syed R. Ali, Digital Switching Systems, McGraw-Hill Inc., New York, 1998

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction,Cross bar Switching,Electronic Space Division Switching

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Course and Cos, Evolution of Telecommunication,	1	22-02-2022			
2.	Basics of switching Systems, Switching system parameters,	1	23-02-2022			
3.	switching system components	1	25-02-2022			
4.	Principle of Common Control, Touch tone dial telephone	1	02-03-2022			
5.	Principles of Cross Bar Switching, Cross bar switch configuration	1	04-03-2022			
6.	Cross point technology, cross bar exchange Organization.	1	08-03-2022			
7.	Stored program control	1	09-03-2022			
8.	Centralized SPC, Distributed SPC	1	11-03-2022			
9.	Enhanced services, Two-Stage Networks, Three stage Networks	1	15-03-2022			
No. of classes required to complete UNIT-I:09				No. of classes taken:		

UNIT-II: Time Division Switching

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Basic Time Division	1	16-03-2022			
2.	Space Switching	1	18-03-2022			
3.	Basic Time Division Time Switching	1	22-03-2022			
4.	Time Multiplexed Space Switching	1	23-03-2022			
5.	Time Multiplexed Time Switching	1	25-03-2022			
6.	Combination Switching	1	29-03-2022			
7.	Revision	1	30-03-2022			
No. of classes required to complete UNIT-II:7				No. of classes taken:		

UNIT-III: Telephone Networks, Traffic Engineering

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Subscriber Loop System	1	01-04-2022			
2.	Switching hierarchy and Routing,	1	05-04-2022			
3.	Transmission Plan	1	06-04-2022			
4.	Numbering Plan, Charging Plan	1	08.04.2022			
5.	Signaling Techniques, In Channel Signaling,	1	19-04-2022			
6.	Common Channel Signalling	1	20-04-2022			
7.	Network Traffic Load and parameters	1	22-04-2022			
8.	Grade of Service Blocking Probability.	1	04.05.2022			
No. of classes required to complete UNIT-III:8				No. of classes taken:		

UNIT-IV : Data Communication Networks, Integrated Services Digital Network

S.No.	Topics to be covered	No. of	Tentative	Actual	Teaching	HOD

		Classes Required	Date of Completion	Date of Completion	Learning Methods	Sign Weekly
1.	Introduction, network architecture, network topologies,	1	06-05-2022			
2.	layered network architecture-OSI reference model, Protocols	1	10-05-2022			
3.	Data communications hardware, Data communication circuits	1	11-05-2022			
4.	Circuit Switching, Packet switching and virtual circuit switching concept	1	13.05.2022			
5.	Repeaters, Bridges, Routers and gate ways	1	17-05-2022			
6.	ISDN Protocol Architecture	1	18-05-2022			
7.	Transmission Channels, User Network Interfaces	1	20.05.2022			
8.	Signaling, Numbering and Addressing	1	24-05-2022			
No. of classes required to complete UNIT-IV:8				No. of classes taken:		

UNIT-V : Digital Subscriber Line

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	ADSL	1	25-05-2022			
2.	Cable Modem, Traditional Cable Networks, HFC Networks	1	27.05.2022			
3.	Sharing, CM & CMTS, DOCSIS	1	31-05-2022			
4.	SONET- Devices, Frame, Frame Transmission	1	01-06-2022			
5.	Synchronous Transport Signals, STS-I, Virtual Tributaries.	1	03-06-2022			
No. of classes required to complete UNIT-V:5				No. of classes taken:		

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Twisted pair, Co-axial cables, Fiber Optic cables	1	03-06-2022			

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	**Marks**
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
I-Mid Examination (Units-I & II)	M1=20
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=20
II-Quiz Examination (Units-III, IV & V)	Q2=10
Attendance	B=5
Assignment Marks = Best Four Average of A1, A2, A3, A4, A5	A=5
Mid Marks =75% of Max(M1,M2)+25% of Min(M1,M2)	M=20
Quiz Marks =75% of Max(Q1,Q2)+25% of Min(Q1,Q2)	B=10
Cumulative Internal Examination (CIE) : A+B+M+Q	40
Semester End Examination (SEE)	60
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	**Communication:** Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
PSO 2	**VLSI and Embedded Systems:** Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools
PSO 3	**Signal Processing:** Apply the Signal processing techniques to synthesize and realize the issues related to real time applications

Date: 22.02.2022

Course Instructor	Course Coordinator	Module Coordinator	HOD
(Dr.M.V.Sudhakar)	(Dr.A.Narendra Babu)	(Dr.M.V.Sudhakar)	(Dr.Y.Amar Babu)

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT

Part-A

PROGRAM : B.Tech. VI-Sem., ECE-B, R17 Regulations

ACADEMIC YEAR : 2021-22

COURSE NAME & CODE : PRESENTATION SKILLS - 17FE61

L-T-P STRUCTURE : **0**-0-2

COURSE CREDITS : 1

COURSE INSTRUCTOR : Ms. M. Anuradha Asst. Pof.

COURSE COORDINATOR : Dr. B. Samrajya Lakshmi

PRE-REQUISITES : Students should have fundamental knowledge in making conversations in English and be with readiness to speak

Course Educational Objective : To help students make oral presentations, power point presentations, participate in group discussions and write project/research/technical reports/formal letters by gathering information and organizing ideas relevantly and coherently.

Course Outcomes : At the end of the course, the student will be able to

CO1 : Make power point presentations and oral presentations
CO2 : Use standard vocabulary contextually
CO3 : Manage skillfully through group discussions.
CO4 : Negotiate skillfully for better placement.

Course Articulation Matrix:

Course		Program Outcomes (POs)											
	POs→	1	2	3	4	5	6	7	8	9	10	11	12
17FE61	CO1		1		3		2			3	3		2
	CO2		1		3		2			3	3		2
	CO3		1		3		2			3	3		2
	CO4		1		3		2			3	3		2

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

Bos Approved Lab Manual:

- Board of Editors, "ELCS Lab Manual – A Workbook of CALL and ICS Lab Activities", Orient Black Swan Pvt. Ltd., Hyderabad, 2016.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Activity	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
1.	Introduction	2	23.02.2022		TLM4		
2.	Self Introduction	2	02.03.2022		TLM4	CO1	
3.	JAM- I (prepared)	2	09.03.2022		TLM4	CO1	
4.	JAM-II (Extempore)	2	16.03.2022		TLM4	CO1	
5.	Group Discussion	2	23.03.2022		TLM4, TLM6	CO3	
6.	Group Discussion	2	30.03.2022		TLM4, TLM6	CO3	
7.	Reading Comprehension/Listening Comprehension	2	06.04.2022		TLM3	CO2	
8.	Poster Presentation	2	20.04.2022		TLM2, TLM4	CO1	
9.	Power point Presentation	2	27.04.2022		TLM2, TLM4	CO1	
10.	Vocabulary(one-word substitutes/analogy/idioms)	2	04.05.2022		TLM1, TLM3	CO2	
11.	Letter & Résumé writing	2	11.05.2022		TLM1, TLM3	CO4	
12.	Vocabulary(Synonyms/Antonyms)	2	18.05.2022		TLM1, TLM3	CO2	
13.	Mock Interviews	2	25.05.2022		TLM6	CO4	
14.	Internal Lab Exam		01.06.2022				
15.	Total	26					

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

Part - C

EVALUATION PROCESS:

According to Academic Regulations of R17 Distribution and Weightage of Marks For Laboratory Courses is as follows.

(a) Continuous Internal Evaluation (CIE):

- ✓ The continuous internal evaluation for laboratory courses (including Computer aided engineering drawing, computer aided engineering graphics, Computer aided machine drawing etc.) is based on the following parameters:

Parameter		Marks
Day – to – Day Work	Observation	10 Marks
	Record	10 Marks
Internal Test		10 Marks
Attendance		05 Marks
Viva – Voce During Regular Lab Sessions		05 Marks
Total		**40 Marks**

(b) Semester End Examinations (SEE:

- ✓ The performance of the student in laboratory courses shall be evaluated jointly by internal and external examiners for 3 hours duration as per the parameters indicated below:

Parameter	Marks
Dialogue writing	10 Marks
Presentation	10 Marks
Interview	20 Marks
Total	**60 Marks**

Rubrics For Evaluation of Laboratory Courses								
Day-To-Day Lab (Observation) Performance Evaluation (R-17)					Record Performance Evaluation (R-17)			
S.N	Criteria	Poor	Average	Good	Criteria	Poor	Average	Good

% of Attendance	Marks
≥ 95	05 Marks
90 to < 95	04 Marks
85 to < 90	03 Marks
80 to < 85	02 Marks
75 to < 80	01 Mark

1	Language suitability **(4 Marks)**	Wrong usage of words Grammatical errors **(2 Marks)**	Some points are missing from the data written Wrong usage of grammar & vocabulary. **(3 Marks)**	Well-written & spoken Language is error free **(4 Marks)**	Language **(4 Marks)**	Language used is not suitable Full of incorrect vocabulary **(2 Marks)**	Some words are inappropriately used / wrongly spelt **(3Marks)**	Language used is good No word/ spelling errors **(4 Marks)**
2	Content **(4Marks)**	Unable to Deliver all the pints Delivering Irrelevant point **(2 Marks)**	Some points are not given Point analysis is not upto the mark **(3 Marks)**	All the points are analysed properly More content was delivered. **(4 Marks)**	Content **(4 Marks)**	Very less points were written Points were not analysed properly **(2 Marks)**	Some of the points were missing Some points are not properly analysed **(3 Marks)**	Complete information is provided for the topic Important information is provided with illustrations/ exaamples **(4 Marks)**
3	Style of Presentation **(2 Marks)**	Inappropriate body language Improper prentation **(0 Marks)**	Prentation is not upto the mark **(1 Mark)**	Presented well with appropriate ettiquett All important conclusions have been clearly made, student shows good understanding of the topic. **(2 Marks)**	Grammar & Neatness **(2 Mark)**	Frequent grammar and/r spelling errors writing style is rough and immature **(1/2 Mark)**	Some grammatical errors **(1 Marks)**	No grammar/ spelling corrections are found and well-written **(2 Marks)**

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO1: To Attain a solid foundation in Electronics & Communication Engineering fundamentals with an attitude to pursue continuing education.

PEO2: To Function professionally in the rapidly changing world with advances in technology

PEO3: To Contribute to the needs of the society in solving technical problems using Electronics & Communication Engineering principles, tools and practices.

PEO4: To Exercise leadership qualities, at levels appropriate to their experience, this addresses issues in a responsive, ethical, and innovative manner

PROGRAMME OUTCOMES (POs)

PO1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

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 instructions.

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.

Name of the Faculty	Name of Module Coordinator	HOD
Ms. M. Anuradha, Ms. K. Sridevi	Dr. B. Samrajya Lakshmi	Dr. A. Rami Reddy

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT

PROGRAM : B.Tech. VI Sem., ECE-B

ACADEMIC YEAR : 2021-2022

COURSE NAME & CODE : OOPS Through JAVA LAB – 17CI65

L-T-P STRUCTURE : 0-0-2

COURSE CREDITS 1

COURSE INSTRUCTOR : **Mr. A.Gopi Suresh**

COURSE COORDINATOR : **S. Nagarjuna Reddy**

PRE-REQUISITE: C & C++

COURSE OBJECTIVE:

Concentrates on the methodological and technical aspects of software design andprogramming based on OOP. Acquire the basic knowledge and skills necessary to implement object-oriented programming techniques in software development through java. Know about the importance of GUI based applications and the development of applications through java.

COURSE OUTCOMES (COs)

At the end of the course, the student will be able to:

CO1: Implement the concepts of OOP in program design.

CO2: Apply Exception handling mechanism and implement Multi-thread programming.

CO3: Design CUI and GUI based applications using JDBC concepts.

CO4: Improve individual / teamwork skills, communication & report writing skills withethical values.

COURSE ARTICULATION MATRIX (Correlation between Cos &POs, PSOs):

Course Code	COs	Programme Outcomes												PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
17CI60	CO1	2	3	3	1	1	-	-	-	-	-	-	1	3	-	-
	CO2	2	3	3	1	1	-	-	-	-	-	-	1	3	-	-
	CO3	2	3	3	1	1	-	-	-	-	-	-	1	3	3	1
	CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-
1 = Slight (Low)		**2 = Moderate (Medium)**							**3-Substantial(High)**							

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'1-** Slight (Low), **2 -** Moderate (Medium), **3 -** Substantial (High).

S.No.	Programs to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Java programming	2	22-02-2022 & 25-02-2022		TLM8	
2.	Introduction to Java Compiler	2	01-03-2022 & 04-03-2022		TLM8	
3.	Programs on Basic control structures & Loops	2	08-03-2022 & 11-03-2022		TLM4 / TLM5	
4.	Programs on Basic control structures & Loops	2	15-03-2022 & 18-03-2022		TLM4 / TLM5	
5.	Programs on recursion	2	22-03-2022 & 25-03-2022		TLM4 / TLM5	
6.	Programs on Arrays	2	29-03-2022 & 01-04-2022		TLM4 / TLM5	
7.	Programs on Constructors & Method Overloading	2	05-04-2022 & 08-04-2022		TLM4 / TLM5	
8.	Programs on String & String Buffer classes	2	19-04-2022 & 23-04-2022		TLM4 / TLM5	
9.	Programs on Inheritance, super and final keyword	2	26-04-2022 & 29-04-2022		TLM4 / TLM5	
10.	Programs on Run-Time Polymorphism, Packages, andInterfaces	2	03-05-2022 & 06-05-2022		TLM4 / TLM5	
11.	Programs on Exception Handling& Multithreading	2	10-05-2022 & 13-05-2022		TLM4 / TLM5	
12.	Programs on Applets & Event Handling	2	17-05-2022 & 20-05-2022		TLM4 / TLM5	
13.	Programs on Applets & Event Handling	2	24-05-2022 & 27-05-2022		TLM4 / TLM5	
14.	Programs on AWT Components & Layout Managers, Programs onSwings	2	31-05-2022 & 03-06-2022		TLM4 / TLM5	

Teaching Learning Methods					
TLM1	Chalk and Talk	**TLM4**	Problem Solving	**TLM7**	Seminars or GD
TLM2	PPT	**TLM5**	Programming	**TLM8**	Lab Demo
TLM3	Tutorial	**TLM6**	Assignment or Quiz	**TLM9**	Case Study

ACADEMIC CALENDAR

Description	From	To	Weeks
I Phase of Instructions-1	21-02-2022	09-04-2022	7W
I Mid Examinations	11-04-2022	16-04-2022	1W
II Phase of Instructions	18-04-2022	04-06-2022	7W
II Mid Examinations	06-05-2022	11-06-2022	1W
Preparation and Practicals	13-06-2022	18-06-2022	1W
Semester End Examinations	20-06-2022	02-07-2022	2W

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

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

PROGRAM SPECIFIC OUTCOMES (PSOs):

PSO1	**Programming Paradigms:** To inculcate algorithmic thinking, formulation techniques and visualization, leading toproblem solving skills using different programming paradigms.
PSO2	**Data Engineering:** To inculcate an ability to Analyze, Design and implement data driven applications into the students.
PSO3	**Software Engineering:** Develop an ability to implement various processes / methodologies /practices employed in desivalidation, testing and maintenance of software products

Course Instructor	Course Coordinator	Module Coordinator	HOD
A.Gopi Suresh	S. Nagarjuna Reddy	Dr. Y.Vijay Bhaskar Reddy	Dr. D.Veeraiah

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT

PART – A

Name of Course Instructor	: Mrs.K. Balavani	
Course Name	: **MICROPROCESSORS AND MICROCONTROLLERS LAB**	
Course Code	: **17EC70**	
L-T-P Structure	: 0-2-0	Credits : 2
Program/Sem/Sec	: B.Tech., ECE., VI-Sem., Sections- B	A.Y : 2021-22

Pre-requisites: Pulse and switching circuits lab

Course Educational Objectives: In this course, student will understand working of instructions by practicing programs of 8086 / 8051 and develop applications by interfacing devices.

COURSE OUTCOMES (COs): At the end of the course, students are able to

- **CO 1** : **Demonstrate** program proficiency using the various instructions of the 8086 microprocessor / 8051 microcontroller.
- **CO 2** : **Apply** different programming techniques like loops, subroutines for various applications.
- **CO 3** : **Analyze** systems for different applications by interfacing external devices.

COURSE ARTICULATION MATRIX:

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	3	2	2	-	-	-	-	-	-	-	-	1	-
CO2	3	3	2	2	2	-	-	-	-	-	-	-	-	2	-
CO3	2	3	3	3	3	-	-	-	-	-	-	-	-	3	-

Note: 1- Slight (Low), **2** – Moderate (Medium), **3** - Substantial (High), no correlation **'-'**

Prescribed Syllabus:

17EC70 - MICROPROCESSORS AND MICROCONTROLLERS LAB

LIST OF EXPERIMENTS

Part-1: 8086 programs:

1. Program to demonstrate data transfer operation
2. Program to demonstrate arithmetic operation
3. Program to demonstrate logical operation
4. Program to demonstrate shift operation
5. Program to demonstrate string operation
6. Program to demonstrate looping operation
7. Program to demonstrate decision making operations

PART-2: 8051 PROGRAMS:

8. Programs to demonstrate bit-manipulation operations.
9. Programs using Interrupts
10. Programming timer / counter.
11. Programming Serial communication application.
12. Program to demonstrate decision making operations
13. Program to demonstrate looping operations

PART-3: INTERFACING PROGRAMS (using 8086 & 8051 kits)

14. Interfacing ADC
15. Interfacing DAC .
16. Interfacing stepper motor.
17. Interfacing 7-segment display.
18. Interfacing keyboard.
19. Interfacing serial/parallel Printer.

PART-4: Content beyond the syllabus

(using 8086 & 8051 kits or MASM Tool)

20. Interfacing Programs for content beyond the syllabus.

PART – B

LAB SCHEDULE (LESSON PLAN): Section-A

LIST OF EXPERIMENTS (Minimum 12 Experiments to be conducted)

S.No.	Experiments to be conducted	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
	CYCLE-1					
1.	Program to demonstrate data transfer operation	2	22-02-2022		**TLM4**	
2.	Program to demonstrate arithmetic, logical and shift operations.	2	08-03-2022		**TLM4**	
3.	Program to demonstrate string operation.	2	15-03-2022		**TLM4**	
4.	Program to demonstrate looping operation.	2	22-03-2022		**TLM4**	
5.	Program to demonstrate decision making operations.	2	29-03-2022		**TLM4**	
	CYCLE-2					
6.	Programs to demonstrate bit-manipulation operations.	2	19-04-2022		**TLM4**	
7.	Programs using Interrupts and timer / counter.	2	26-04-2022		**TLM4**	
8.	Programming Serial communication application.	2	10-05-2022		**TLM4**	
9.	Program to demonstrate decision making operations.	2	17-05-2022		**TLM4**	
10.	Program to demonstrate looping operations.	2	24-05-2022		**TLM4**	
	CYCLE-3					
11.	Interfacing ADC & DAC and Interfacing stepper motor.	2	31-05-2022		**TLM4**	
12.	Interfacing 7-segment display & keyboard.	2			**TLM4**	
13.	Interfacing serial/parallel Printer.	2			**TLM4**	
14.	Internal Examination	2			**TLM4**	
No. of classes required to complete:		30	No. of classes conducted:			

S.No.	Experiments to be conducted	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Interfacing Programs for content beyond the syllabus.	2	17-05-2022		**TLM4**	

PART – B

LAB SCHEDULE (LESSON PLAN): Section-A

LIST OF EXPERIMENTS (Minimum 12 Experiments to be conducted)

S.No.	Experiments to be conducted	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
	CYCLE-1					
1.	Program to demonstrate data transfer operation	2	25-02-2022		**TLM4**	
2.	Program to demonstrate arithmetic, logical and shift operations.	2	04-03-2022		**TLM4**	
3.	Program to demonstrate string operation.	2	11-03-2022		**TLM4**	
4.	Program to demonstrate looping operation.	2	25-03-2022		**TLM4**	
5.	Program to demonstrate decision making operations.	2	01-04-2022		**TLM4**	
	CYCLE-2					
6.	Programs to demonstrate bit-manipulation operations.	2	08-04-2022		**TLM4**	
7.	Programs using Interrupts and timer / counter.	2	22-04-2022		**TLM4**	
8.	Programming Serial communication application.	2	29-04-2022		**TLM4**	
9.	Program to demonstrate decision making operations.	2	06-05-2022		**TLM4**	
10.	Program to demonstrate looping operations.	2	13-05-2022		**TLM4**	
	CYCLE-3					
11.	Interfacing ADC & DAC and Interfacing stepper motor.	2	20-05-2022		**TLM4**	
12.	Interfacing 7-segment display & keyboard.	2	27-05-2022		**TLM4**	
13.	Interfacing serial/parallel Printer.	2			**TLM4**	
14.	Internal Examination	2	03-06-2022		**TLM4**	
No. of classes required to complete:		30	No. of classes conducted:			

S.No.	Experiments to be conducted	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Interfacing Programs for content beyond the syllabus.	2	06-05-2022		**TLM4**	

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART – C

EVALUATION PROCESS:

Evaluation Task	**COs**	**Marks**
Day to Day work	1,2,3,4	A1=20
Attendance (>95%=5, 90-95%=4,85-90%=3,80-85%=2,75-80%=1)		A2=5
Viva-Voce	1,2,3,4	A3=5
Internal Lab Examination	1,2,3,4	B=10
Total Internal Marks(A1+A2+A3+B)		**C=40**
Semester End Examinations	1,2,3,4	**D=60**
Total Marks: C+D	1,2,3,4	**100**

PART – D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1:	**Communication:** Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
PSO 2:	**VLSI and Embedded Systems:** Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools
PSO 3:	**Signal Processing:** Apply the Signal processing techniques to synthesize and realize the issues related to real time applications

Course Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**
Mrs. K.Balavani	**K.Sasi Bhushan**	**Dr.P.Lachi Reddy**	**Dr.Amar Babu**

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
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DEPARTMENT OF ECE

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr. Y.S.V.Raman / Dr. T.Satyanaryana
Course Name & Code : Seminar
L-T-P Structure : 0-0-2 Credits : 1
Program/Sem/Sec : B.Tech., ECE., VI-Sem., Sections- B A.Y : 2021-22

PRE-REQUISITE: Knowledge on English and basic concepts in electronics and communication engineering.

COURSE EDUCATIONAL OBJECTIVES (CEOs): This course enables the students in Review of literature, analyze complex engineering problems relevant to the society and industry Transforms, Analyze the insight into modern technologies, tools and systems in the field of Electronics & Communication Engineering and enhances the English communication skills.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Review literature, analyze complex engineering problems relevant to the society and industry
CO 2	Analyze the insight into modern technologies, tools and systems in the field of Electronics & Communication Engineering
CO 3	Adapt communication & Presentation skills
CO 4	Develop Report writing skills.

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1	-	2	2	-	-	2	-	-	3	3	3	3
CO2	1	2	2	2	3	2	-	-	2	-	-	3	3	3	3
CO3	-	-	-	-	-	-	-	-	-	3	-	3	-	-	-
CO4	-	-	-	-	-	-	-	-	-	3	-	3	-	-	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):
UNIT-I: Signal Analysis

S.No.	Seminar presentation and Report writing	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Seminar presentation by Roll No. 19761A0465 - 19761A0470	2	26/2/22		**TLM6**	
2.	Seminar presentation by Roll No. 19761A0471 - 19761A0476	2	5/3/22		**TLM6**	
3.	Seminar presentation by Roll No. 19761A0476 - 19761A0482	2	12/3/22		**TLM6**	
4.	Seminar presentation by Roll No. 19761A0483 - 19761A0489	2	19/3/22		**TLM6**	
5.	Seminar presentation by Roll No. 19761A0490 - 19761A0495	2	26/3/22		**TLM6**	
6.	Seminar presentation by Roll No. 19761A0496 - 19761A04A1	2	2/4/22		**TLM6**	
7.	Seminar presentation by Roll No. 19761A04A2 - 19761A04A6	2	9/4/22		**TLM6**	
8.	Seminar presentation by Roll No. 19761A04A7 - 19761A04B8	2	23/4/22		**TLM6**	
9.	Seminar presentation by Roll No. 19761A04B9 - 19761A04C4	2	30/4/22		**TLM6**	

10.	Seminar presentation by Roll No. 19761A04C5 - 19761A04C9	2	7/5/22		**TLM6**	
11.	Seminar presentation by Roll No. 20765A0407 - 20765A0412	2	14/5/22		**TLM6**	
12.	Report Preparation and submission	2	21/5/22		**TLM6**	
13.	Report Preparation and submission	2	28/5/22		**TLM6**	
No. of classes required to complete : 26				No. of classes taken:		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	**Marks**
Survey	10
Quality of work	20
Seminar report	20
Presentation	30
Interaction	20
Total Marks:	**100**

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**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
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	**Communication:** Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
PSO 2	**VLSI and Embedded Systems:** Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools
PSO 3	**Signal Processing:** Apply the Signal processing techniques to synthesize and realize the issues related to real time applications

Course Instructor	Course Coordinator	Module Coordinator	HOD
(Dr. Y.S.V.Raman)	(Dr. T.Satyanarayana)	(Dr. B.Poornaiah)	(Dr. Y. Amar Babu)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT

Part-A

PROGRAM : B.Tech.VI Semester, Electronics and Communication Engineering (Section-B)
ACADEMIC YEAR : 2021-22
COURSE NAME & CODE : Employability Enhancement Skills-II – 17PD08
L-T-P STRUCTURE : 1 (L) – 0 (T) -0
COURSE CREDITS : NIL
COURSE INSTRUCTOR : **Mrs. Ch. Padma, Assistant Professor; Mrs. K. Samaikya, Assistant Professor**
COURSE COORDINATOR : **Mrs. K. Samaikya, Assistant Professor**
PRE-REQUISITES : Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs):

To develop language & communication skills to augment professional development

To inculcate industry-readiness skills among professional students

To familiarize students with elements of Quantitative techniques, Reasoning required for placement tests.

To acquaint the students with concepts and tools that will serve as building blocks for analytical thinking

To help students in career planning and professional development

COURSE OUTCOMES (COs)

At the end of the course, the student will be able to:

CO 1	To identify, analyze and apply quantitative techniques related to qualify in Placement tests.
CO 2	To effectively utilize verbal ability & communication skills to qualify in Placement tests.
CO 3	To effectively communicate in professional as well as social contexts.
CO 4	To apply key soft skills effectively in Job Interviews as well in other professional contexts.
CO 5	Inculcate lifelong learning through personal effectiveness as well as leadership.

COURSE ARTICULATION MATRIX (Correlation between Cos & POs, PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3				3	3	3				3			
CO2	3	3				3	3					3			
CO3	3		3				2					2			
CO4	3					2	3	2				3			
CO5	3	3	3	3		3	3	3				3			

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'1-** Slight(Low), **2 –** Moderate(Medium), **3 -** Substantial (High).

SYLLABUS

UNIT – I:
Verbal Ability: Tenses& Conditional Clauses
Quantitative Aptitude: Alligation or Mixture, Simple Interest and Compound Interest

UNIT – II:
Verbal Ability: Sentence Completions
Quantitative Aptitude: Time and work, Pipes and Cistern, Permutations and Combinations, Probability

UNIT – III:
Verbal Ability: Spot the Errors
Quantitative Aptitude: Time and Distance, Problems on trains, Boats and Streams, Races and Games of Skill

UNIT – IV:
Verbal Ability: Jumbled Sentences, Cloze Tests
Quantitative Aptitude: Area, Volume and Surface Areas, Progressions

UNIT – V:
Verbal Ability: Advanced Reading Comprehension
Quantitative Aptitude: Clocks and Calendars, Cubes and Dice

BOS APPROVED TEXT BOOKS:

1. Objective Arithmetic, S. CHAND Publishers.
2. R.S.AGGARWAL, *Verbal & Non-Verbal Reasoning*, S. CHAND Publishers
3. Objective English. Edgar Thorpe, Pearson Education, New Delhi.2009
4. Sanjay Kumar, Pushpa Lata: Communication skills. Oxford, Delhi, 2012
5. Vocabulary Builder for Students of Engineering and Technology (A self – study manual for vocabulary Enhancement) Y.Saloman Raju, Maruthi Publishers

BOS APPROVED REFERENCE BOOKS:

1. Meenakshi Raman, Sangeetha: Technical Communication, Oxford University Press, 2008
2. Baron's Guide on GRE
3. Vocabulary Builder for Students of Engineering and Technology (A self – study manual for vocabulary Enhancement) Y.Saloman Raju, Maruthi Publishers
4. Dinesh Khattar, *The Pearson Guide to Quantitative Aptitude*, Pearson Education
5. M. Tyra, *Magical Book on Quicker Maths*, BSC Publishers Quantitative Aptitude by Arun Sharma

Part-B
COURSE DELIVERY PLAN (LESSON PLAN): Section-A

UNIT-I:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction –Alligation or Mixture	1	21-02-2022		**TLM1**	CO1	T1, T2	
2.	Introduction to course- Tenses	1	24-02-2022		**TLM1**	CO1	T1, T2	
3.	Problems on Alligation or Mixture	1	28-02-2022		**TLM1**	CO1	T1, T2	
4.	Tenses worksheet	1	3-03-2022		**TLM1**	CO1	T1, T2	
5.	Simple Interest & Compound Interest	1	7-03-2022		**TLM1**	CO1	T1, T2	
6.	Conditional Clauses	1	10-03-2022		**TLM1**	CO1	T1, T2	
7.	Problems on Simple Interest & Compound Interest	1	14-03-2022		**TLM1**	CO1	T1, T2	
No. of classes required to complete UNIT-I:		7			No. of classes taken:			

UNIT-II:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Sentence Completion	1	17-03-2022		**TLM1**	CO2	T1, T2	
2.	Time and Work, Pipes and Cistern	1	21-03-2022		**TLM1**	CO2	T1, T2	
3.	Sentence Completion worksheet	1	24-03-2022		**TLM1**	CO2	T1, T2	
4.	Permutations and Combinations	1	28-03-2022		**TLM1**	CO2	T1, T2	
5.	Worksheet	1	31-03-2022		**TLM1**	CO2	T1, T2	
6.	Probability	1	04-04-2022		**TLM1**	CO2	T1, T2	
7.	**I Mid Examinations**	6 days	11-04-2022 to 16-04-2022					
No. of classes required to complete UNIT-II:		6			No. of classes taken:			

UNIT-III:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Error spotting	1	07-04-2022		**TLM1**	CO3	T1, T2	
2.	Time and Distance	1	18-04-2022		**TLM1**	CO3	T1, T2	
3.	Error spotting worksheet	1	21-04-2022		**TLM1**	CO3	T1, T2	
4.	Problems on Trains, Boats and Streams	1	25-04-2022		**TLM1**	CO3	T1, T2	
5.	Error spotting worksheet	1	28-04-2022		**TLM1**	CO3	T1, T2	
6.	Races and Games of Skill	1	02-05-2022		**TLM1**	CO3	T1, T2	
No. of classes required to complete UNIT-III		6			No. of classes taken:			

UNIT-IV:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Jumbled sentences	1	05-05-2022		**TLM1**	CO4	T1, T2	
2.	Area, Volumes and Surface Area	1	09-05-2022		**TLM1**	CO4	T1, T2	
3.	Jumbled sentences worksheet	1	12-05-2022		**TLM1**	CO4	T1, T2	
4.	Progressions	1	16-05-2022		**TLM1**	CO4	T1, T2	
No. of classes required to complete UNIT-IV		4			No. of classes taken:			

UNIT-V:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Advanced Reading Comprehension passages	1	19-05-2022		**TLM1**	CO5	T1, T2	
2.	Clocks & Calendars	1	23-05-2022		**TLM1**	CO5	T1, T2	
3.	Advanced Reading Comprehension passages	1	26-05-2022		**TLM1**	CO5	T1, T2	
4.	Cubes and Dice	1	30-05-2022		**TLM1**	CO5	T1, T2	
5.	Passages practice	1	02-06-2022		**TLM1**	CO5	T1, T2	
6.	**II Mid Examinations**	6 days	6-6-2022 to 11-6-2022					
No. of classes required to complete UNIT-V : 5					No. of classes taken:			

CONTENTS BEYOND THE SYLLABUS:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign
1.	Advanced Topics in Unit I	1			**TLM1**	CO1	T1, T2, R1 to R5	
2.	Advanced Topics in Unit II	1			**TLM1**	CO2		
3.	Advanced Topics in Unit III	1			**TLM1**	CO3		
4.	Advanced Topics in Unit IV	1			**TLM1**	CO4		
5.	Advanced Topics in Unit V	1			**TLM1**	CO5		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

ACADEMIC CALENDAR:

Description	From	To	Weeks
Commencement of Class Work: 21-02-2022			
I Phase of Instructions	21-02-2022	09-04-2022	7 W
I Mid Examinations	11-04-2022	16-04-2022	1 W
II Phase of Instructions	18-04-2022	04-06-2022	7 W
II Mid Examinations	06-06-2022	11-06-2022	1 W
Preparation and Practical's	13-06-2022	18-06-2022	1 W
Semester End Examinations	20-06-2022	02-07-2022	2 W

Part - C

EVALUATION PROCESS: R17 Regulation

Evaluation Task	Marks
Cumulative Internal Examination (CIE) :	100
Total Marks = CIE	100

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO1: To Attain a solid foundation in Electronics & Communication Engineering fundamentals with an attitude to pursue continuing education.
PEO2: To Function professionally in the rapidly changing world with advances in technology.
PEO3: To Contribute to the needs of the society in solving technical problems using Electronics & Communication Engineering principles, tools and practices.
PEO4: To Exercise leadership qualities, at levels appropriate to their experience, which addresses issues in a responsive, ethical, and innovative manner.

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1: Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
PSO2: Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools.
PSO3: Apply the Signal processing techniques to synthesize and realize the issues related to real time applications.

Position	***Course Instructor***	***Course Coordinator***	***Module Coordinator***	***HOD***
Name	**K.SAMAIKYA/** **CH. PADMA**	**K.SAMAIKYA**	**Dr. SUJITH KUMAR RATH**	**Dr. SUJITH KUMAR RATH**
Signature				

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DEPARTMENT OF ELECTRONICS & COMMUNICATIONS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr.M. Sivasankara Rao / Dr.A. Narendra Babu
Course Name & Code : AECEL/C
Program/Sem/Sec : B.Tech., ECE., VI-Sem, A Sec A.Y : 2021-22

PART-B

PLAN OF ACTION (Association of Electronics and Communication Engineers of LBRCE):-

S.No.	Topics to be covered	Roll.No. of Participants	Tentative Date of Completion	Actual Date of Completion	HOD Sign Weekly
1.	IEEE Spectrum Magazine-Any Topic from Latest Editions (Presentation/Group Discussion)	19761A465 to 19761A0469	24-02-2022		
2.	Smart India Hackathon /Ideation (Presentation/Group Discussion)	19761A0470 to 19761A0474	03-03-2022		
3.	Current Affairs/Technical Talks	19761A0475 to 19761A0479	10-03-2022		
4.	Technical Quiz	19761A0480 to 19761A0484	17-03-2022		
5.	Debate on Latest Technologies	19761A0485 to 19761A0489	24-03-2022		
6.	IEEE Spectrum Magazine-Any Topic from Latest Editions (Presentation/Group Discussion)	19761A0490 to 19761A0494	31-03-2022		
7.	Smart India Hackathon /Ideation (Presentation/Group Discussion)	19761A0495 to 19761A0499	07-04-2022		
8.	Current Affairs/Technical Talks	19761A04A0 to 19761A04A4	21-04-2022		
9.	Technical Quiz	19761A04A5 to 19761A04A9	28-04-2022		
10.	Debate on Latest Technologies	19761A04B0 to 19761A04B4	05-05-2022		
11.	IEEE Spectrum Magazine-Any Topic from Latest Editions (Presentation/Group Discussion)	19761A04B5 to 19761A04B9	12-05-2022		
12.	Smart India Hackathon /Ideation (Presentation/Group Discussion)	19761A04C0 to 19761A04C4	19-05-2022		
13.	Current Affairs/Technical Talks	19761A04C5 to 19761A04C9	26-05-2022		
14.	Technical Quiz	20765A0407 to 20765A0412	02-06-2022		

Course Instructor
(M. Sivasankara Rao)

HOD
(Dr.Y.Amar Babu)

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr P. Rakesh Kumar
Course Name & Code : Antennas and Wave Propagation &17EC21
L-T-P Structure : 2-2-0 Credits: 3
Program/Sem/Sec : B.Tech., ECE., VI-Sem., Sections- C A.Y :2021-22

Pre-Requisites: EM Fields and Waves, Transmission Lines and Waveguides

Course Objectives: This course provides the knowledge on Antennas and Radiation fundamentals. The course will expose different types of Antennas and their applications. The course also gives the complete information regarding Propagation of Radio wave in atmosphere.

Course Outcomes (COs): At the end of the course, students are able to

CO1	**Understand** radiation mechanism, antenna properties, ground, space, and sky wave propagations
CO2	**Analyze** wire antenna, ground, space, and sky wave propagation mechanism for communication purpose and synthesize various Antenna Arrays
CO3	**Design** HF, VHF and UHF Antennas
CO4	**Evaluate** and measure antenna parameters radiation pattern, Gain, Impedance, Radiation resistance and Aperture efficiency

Course Articulation Matrix (Correlation between COs &POs, PSOs):

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	1	2	-	-	-	-	-	-	-	-	-	1	1	-	-
CO2	2	3	1	-	-	-	-	-	-	-	-	3	2	-	-
CO3	3	2	3	-	-	-	-	-	-	-	-	2	3	-	-
CO4	3	2	3	-	-	-	-	-	-	-	-	1	2	-	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1-Slight(Low), **2**-Moderate(Medium), **3**-Substantial (High).

TEXT BOOK(S):

T1 Constantine A. Balanis, "Antenna Theory: Analysis and Design", John Wiley & sons Publishers,2nd Edition

T2 K.D. Prasad, Antennas and Wave Propagation, Satya Prakashan Publishers, New Delhi.

REFERENCE BOOK(S):

R1 G.S.N Raju, "Antennas and Wave Propagation", Pearson Education Publishers.

R2 Jordan and Balmain, Electromagnetic fields and Radiating systems, Pearson Education. Publishers.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-C

UNIT-I: Radiation and Antenna fundamentals:

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Course and COs	1	23.02.2022		TLM1	
2.	Introduction to Unit-I	1	24.02.2022		TLM1	
3.	Radiation mechanism	1	25.02.2022		TLM1	
4.	Antenna parameters-radiation pattern	1	26.02.2022		TLM2	
5.	Radiation intensity, directivity, gain, Radiation efficiency,	1	02.03.2022		TLM1	
6.	Beam width, beam area, Effective aperture, effective length	1	03.03.2022		TLM1	
7.	Network theorems-antennas	1	05.03.2022		TLM1	
8.	Potential functions-heuristic approach, Maxwells Equation approach	1	09.03.2022		TLM1	
9.	Potential functions for sinusoidal oscillations, Alternating current element-Analysis	1	10.03.2022		TLM1	
10.	Half wave dipole and quarter wave mono pole antennas-Analysis	1	11.03.2022		TLM2	
11.	Radiation from quarter wave mono pole and Half wave dipole antennas	1	16.03.2022		TLM2	
12.	Radiation resistance of quarter wave mono pole and Half wave dipole antennas	1	17.03.2022		TLM1	
13.	**Tutorial-1**	1	04.03.2022		TLM3	
14.	**Tutorial-2**	1	19.03.2022		TLM3	
No. of classes required to complete UNIT-I : 14			No. of classes taken :			

UNIT-II: Antennas Array Analysis:

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
15.	Antenna arrays-types	1	23.03.2022		TLM1	
16.	Array of two-point sources	1	24.03.2022		TLM1	
17.	Broad side array	1	25.03.2022		TLM1	
18.	N element Broad side array	1	26.03.2022		TLM1	
19.	End fire array	1	31.03.2022		TLM1 TLM1	
20.	Binomial array, pattern multiplication	1	01.04.2022		TLM1	
21.	Synthesis methods- Chebyshev Method.	1	06.04.2022		TLM1	
22.	Schelnuoff Polynomial Method	1	07.04.2022		TLM1	
23.	Fourier Transform Method, Woodward-Lawson Method	1	08.04.2022		TLM2	
24.	**Tutorial-3**	1	30.03.2022		TLM3	
25.	**Tutorial-4**	1	09.04.2022		TLM3	
No. of classes required to complete UNIT-II		**11**	No. of classes taken:			

UNIT-III: HF, VHF and UHF Antennas:

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
26.	Resonant vs Non resonant antennas	1	20.04.2022		TLM1	
27.	V, Inverted V antennas	1	21.04.2022		TLM1	
28.	Rhombic antenna	1	22.04.2022		TLM1	
29.	Folded dipole antenna	1	23.04.2022		TLM1	
30.	Yagi Uda antenna Log periodic antenna	1	28.04.2022		TLM1	
31.	Helical antenna	1	31.04.2022		TLM1	
32.	Loop antenna	1	01.05.2022		TLM1	
33.	**Tutorial-5**	1	27.04.2022		TLM3	
34.	**Tutorial-6**	1	04.05.2022		TLM3	
No. of classes required to complete UNIT-III : 09				No. of classes taken:		

UNIT-IV: Microwave Antennas & Antenna Measurements:

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
35.	Corner Reflector antennas	1	05.05.2022		TLM1	
36.	Parabolic reflector antenna	1	06.05.2022		TLM1	
37.	Horn antenna	1	07.05.2022		TLM2	
38.	Lens antenna	1	12.05.2022		TLM1	
39.	Measurement of gain, Measurement of directional pattern	1	13.05.2022		TLM1	
40.	Measurement of impedance, beam width	1	14.05.2022		TLM1	
41.	Measurement of radiation resistance, effective aperture, aperture efficiency, directivity	1	18.05.2022		TLM1	
42.	**Tutorial- 7**	1	11.05.2022		TLM3	
43.	**Tutorial-8**	1	19.05.2022		TLM3	
No. of classes required to complete UNIT-IV: 09			No. of classes taken:			

UNIT-V: Wave Propagation:

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
44.	Ground wave propagation	1	20.05.2022		TLM1	
45.	Sky wave propagation-mechanism	1	21.05.2022		TLM1 TLM1	
46.	Layers of Ionosphere	1	25.05.2022		TLM1	
47.	Critical frequency, MUF, OWF, LUHF	1	27.05.2022		TLM1	
48.	Skip distance, virtual height, ionosphere abnormalities	1	28.05.2022		TLM1	
49.	Space wave propagation	1	01.06.2022		TLM1	

50.	Field strength, LOS Duct propagation	1	02.06.2022		TLM1	
51.	**Tutorial-9**	1	26.05.2022		TLM3	
52.	**Tutorial-10**	1	03.06.2022		TLM3	
No. of classes required to complete UNIT-V :09			No. of classes taken			

Contents beyond the Syllabus

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Design of microstrip patch Antennas	1	03.06.2022		TLM2	

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS:

Evaluation Task	Marks
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
I-Mid Examination (Units-I & II)	M1=20
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=20
II-Quiz Examination (Units-III, IV & V)	Q2=10
Mid Marks =75% of Max(M1,M2) + 25% of Min(M1,M2)	M=20
Quiz Marks =75% of Max(Q1,Q2) + 25% of Min(Q1,Q2)	Q=10
Assignment Marks = Average of Best Four of A1, A2, A3, A4, A5	A=5
Attendance	B=5
Cumulative Internal Examination (CIE) : M+Q+A+B	40
Semester End Examination (SEE)	60
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1: **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO 2: **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO 3: **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO 4: **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5: **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

PO 6: **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice

PO 7: **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO 8: **Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9: **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10: **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 11: **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12: **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1: **Communication:** Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.

PSO 2: **VLSI and Embedded Systems:** Design and Analyze Analog and Digital Electronic Circuits or systems and implement real time applications in the field of VLSI and Embedded Systems using relevant tools

PSO 3: **Signal Processing:** Apply the Signal processing techniques to synthesize and realize the issues related to real time applications

Date:

Course Instructor	Course Coordinator	Module Coordinator	HOD
Dr. P. Rakesh Kumar	Dr. E.V. Krishna Rao	Dr. Y.S.V.Raman	Dr. Y. Amar Babu

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L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

DEPARTMENT OF Electronics & Communication Engineering

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr.A.Narendra Babu
Course Name & Code : Telecommunication Switching Systems and Networks-17EC91
L-T-P Structure : 3-0-0 Credits : 3
Program/Sem/Sec : B.Tech., ECE., VI-Sem., Section- C A.Y : 2021-22

PRE-REQUISITE: Analog Communications, Digital Communications

COURSE EDUCATIONAL OBJECTIVES (CEOs): This course provide the knowledge on basics of Telecommunication switching system, Networks, Traffic Engineering and also fundamentals of data communication networks.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	**Understand** the concepts of switching systems, network parameters in telecommunications systems
CO 2	**Analyze** Telephone network parameters & Data Network architectures, Switching techniques and higher data rates telecommunication techniques.
CO 3	**Apply** telephone & data network parameters to maintain smooth traffic in networks.
CO 4	**Evaluate** the performance of Switching systems, Data communication networks and higher data rate systems.

COURSE ARTICULATION MATRIX(Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	-	-	-	-	-	-	-	-	-	1	1	-	-
CO2	2	3	-	-	-	-	-	-	-	-	-	2	2	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	2	2	-	-
CO4	2	3	-	-	-	-	-	-	-	-	-	2	2	-	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

TEXT BOOKS:

T1 Viswanathan. T, Telecommunication Switching System and Networks, Prentice Hall of India Ltd., 1994.
T2 Behrouz. A. Forouzan, Data Communication and Networking, Fourth Edition, Tata McGraw-Hill, New Delhi, 2006.

REFERENCE BOOKS:

R1 J. E. Flood, Telecommunication Switching Traffic and Networks, Pearson Education
R2 L. S. Lawton, Integrated Digital Networks, Galgotta Publication Pvt., Ltd., New Delhi, 1996.
R3 Syed R. Ali, Digital Switching Systems, McGraw-Hill Inc., New York, 1998

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction,Cross bar Switching,Electronic Space Division Switching

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Course and Cos, Evolution of Telecommunication,	1	21-02-2022			
2.	Basics of switching Systems, Switching system parameters,	1	22-02-2022			
3.	switching system components	1	23-02-2022			
4.	Principle of Common Control, Touch tone dial telephone	1	28-02-2022			
5.	Principles of Cross Bar Switching, Cross bar switch configuration	1	02-03-2022			
6.	Cross point technology, cross bar exchange Organization.	1	07-03-2022			
7.	Stored program control	1	08-03-2022			
8.	Centralized SPC, Distributed SPC	1	09-03-2022			
9.	Enhanced services, Two-Stage Networks, Three stage Networks	1	14-03-2022			
No. of classes required to complete UNIT-I:09				No. of classes taken:		

UNIT-II: Time Division Switching

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Basic Time Division	1	15-03-2022			
2.	Space Switching	1	16-03-2022			
3.	Basic Time Division Time Switching	1	21-03-2022			
4.	Time Multiplexed Space Switching	1	22-03-2022			
5.	Time Multiplexed Time Switching	1	23-03-2022			
6.	Combination Switching	1	28-03-2022			
7.	Revision	1	29-03-2022			
No. of classes required to complete UNIT-II:7				No. of classes taken:		

UNIT-III: Telephone Networks, Traffic Engineering

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Subscriber Loop System	1	30-03-2022			
2.	Switching hierarchy and Routing,	1	04-04-2022			
3.	Transmission Plan	1	06-04-2022			
4.	Numbering Plan, Charging Plan	1	18.04.2022			
5.	Signaling Techniques, In Channel Signaling,	1	19-04-2022			
6.	Common Channel Signalling	1	20-04-2022			
7.	Network Traffic Load and parameters	1	25-04-2022			
8.	Grade of Service Blocking Probability.	1	26.04.2022			
No. of classes required to complete UNIT-III:8				No. of classes taken:		

UNIT-IV : Data Communication Networks, Integrated Services Digital Network

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction, network architecture, network topologies,	1	27-04-2022			
2.	layered network architecture-OSI reference model, Protocols	1	02-05-2022			
3.	Data communications hardware, Data communication circuits	1	04-05-2022			
4.	Circuit Switching, Packet switching and virtual circuit switching concept	1	09.05.2022			
5.	Repeaters, Bridges, Routers and gate ways	1	10-05-2022			
6.	ISDN Protocol Architecture	1	11-05-2022			
7.	Transmission Channels, User Network Interfaces	1	16.05.2022			
8.	Signaling, Numbering and Addressing	1	17-05-2022			
No. of classes required to complete UNIT-IV:8				No. of classes taken:		

UNIT-V : Digital Subscriber Line

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	ADSL	1	18-05-2022			
2.	Cable Modem, Traditional Cable Networks, HFC Networks	1	23.05.2022			
3.	Sharing, CM & CMTS, DOCSIS	1	24-05-2022			
4.	SONET- Devices, Frame, Frame Transmission	1	25-05-2022			
5.	Synchronous Transport Signals, STS-I, Virtual Tributaries.	1	30-05-2022			
No. of classes required to complete UNIT-V:5				No. of classes taken:		

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Twisted pair, Co-axial cables, Fiber Optic cables	1	31-05-2022			
2.	CMC & TSSN1		01-06-2022			

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	**Marks**
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
I-Mid Examination (Units-I & II)	M1=20
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=20
II-Quiz Examination (Units-III, IV & V)	Q2=10
Attendance	B=5
Assignment Marks = Best Four Average of A1, A2, A3, A4, A5	A=5
Mid Marks =75% of Max(M1,M2)+25% of Min(M1,M2)	M=20
Quiz Marks =75% of Max(Q1,Q2)+25% of Min(Q1,Q2)	B=10
Cumulative Internal Examination (CIE) : A+B+M+Q	40
Semester End Examination (SEE)	60
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	**Communication:** Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
PSO 2	**VLSI and Embedded Systems:** Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools
PSO 3	**Signal Processing:** Apply the Signal processing techniques to synthesize and realize the issues related to real time applications

Date: 19.02.2022

Course Instructor	Course Coordinator	Module Coordinator	HOD
(Dr.A.Narendra Babu)	(Dr.A.Narendra Babu)	(Dr.M.V.Sudhakar)	(Dr.Y.Amar Babu)

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L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mrs.T.Kalpana
Course Name & Code : Linear Control Systems
L-T-P Structure :2-2-0 Credits : 3
Program/Sem/Sec : B.Tech., ECE., VI-Sem., Sections- C A.Y : 2021-22

PRE-REQUISITE: Signals and Systems, Electrical Circuits and Networks.

COURSE EDUCATIONAL OBJECTIVES (CEOs): This course provides mathematical models for representing different control systems and various steps in deriving transfer function. Various techniques for time and frequency domain analysis will also be learnt. Verifying for stability of systems using frequency domain analysis will also be studied. The concept of state variables for the analysis of continuous system will be introduced.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Summarize the fundamental concepts of control systems.
CO 2	Apply Laplace transform and state space techniques to model dynamic systems.
CO 3	Analyze the stability of the system in time and frequency domain.
CO 4	Design controllers and the state-space model to test the performance of systems.

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	-	-	-	-	-	-	-	-	-	1	-	-	1
CO2	3	3	2	2	-	-	-	-	-	-	-	2	-	-	2
CO3	2	3	1	1	-	-	-	-	-	-	-	2	-	2	3
CO4	3	3	3	3	-	-	-	-	-	-	-	3	-	-	3

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

TEXT BOOKS:

T1 B. C. Kuo , "Automatic Control Systems" John wiley and son's ,8th edition, 2003..

T2 J. Nagrath and M. Gopal, "Control Systems Engineering", New Age International (P) Limited Publishers,2nd edition.

REFERENCE BOOKS:

R1 Katsuhiko Ogata, "Modern Control Engineering", Prentice Hall of India Pvt. Ltd., 3rd edition, 1998.

R2 Norman S. Nise, "Control Systems Engineering", 4th Edition, John Wiley, New Delhi.

R3 A. Nagoorkani, "Control Systems", *RBA Publications*, 2 nd edition, 2016.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Fundamentals of Control Systems & Representation of Control systems

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Course and COs	1	21-02-2022			
2.	Introduction to control systems.	1	22-02-2022			
3.	Classification of Control systems	1	24-02-2022			
4.	Open loop and Closed loop control systems	1	26-02-2022			
5.	Feedback characteristics.	1	28-02-2022			
6.	Block Diagrams, Reduction rules	1	03-03-2022			
7.	**Tutorial-1**	1	05-03-2022			
8.	Problems on Block diagram Reduction	1	07-03-2022			
9.	Signal Flow Graph Terminology	1	08-03-2022			
10.	SFG Reduction using Masons Gain Formula.	1	10-03-2022			
11.	**Tutorial-2**	1	12-03-2022			
No. of classes required to complete UNIT-I:**11**				No. of classes taken:		

UNIT-II: Mathematical Models & Time Response Analysis

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Translational mechanical Systems	1	14-03-2022			
2.	Rotational Mechanical Systems	1	15-03-2022			
3.	Analogous of Mechanical systems to electrical systems	1	17-03-2022			
4.	Armature controlled DC Motor	1	19-03-2022			
5.	Field controlled DC Motor	1	21-03-2022			
6.	Synchro transmitter and receiver.	1	22-03-2022			
7.	Standard test signals and Time response of first order systems	1	24-03-2022			
8.	**Tutorial-3**	1	26-03-2022			
9.	Response of second order system	1	28-03-2022			
10.	Time domain specifications	1	29-03-2022			
11.	Steady state errors and error constants	1	31-03-2022			
12.	Effects of P, PD, PI systems	1	04-04-2022			
13.	Effects of P, PD, PI systems		07-04-2022			
14.	**Tutorial-4**		09-04-2022			
No. of classes required to complete UNIT-II:**14**				No. of classes taken:		

UNIT-III: Stability in Time domain

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	The concept of stability	1	18-04-2022			

2.	Routh's Hurwitz stability criterion, Qualitative and Conditional stability	1	19-04-2022			
3.	Root Locus Technique		21-04-2022			
4.	**Tutorial-5**	1	23-04-2022			
5.	Construction of root loci	1	25-04-2022			
6.	Limitations of Routh"s Hurwitz stability, Effects of adding poles to G(s)H(s) on the root loci.	1	26-04-2022			
7.	Effects of adding zeros to G(s)H(s) on the root loci.	1	28-04-2022			
8.	**Tutorial-6**	1	30-04-2022			
No. of classes required to complete UNIT-III:**08**				No. of classes taken:		

UNIT-IV : Frequency domain Analysis , Nyquist Plots & Compensators

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Frequency domain analysis	1	02-05-2022			
2.	Frequency domain specifications	1	05-05-2022			
3.	**Tutorial-7**	1	07-05-2022			
4.	Bode plot , Stability Analysis from Bode Plots	1	09-05-2022			
5.	Polar Plots, Nyquist Plots	1	10-05-2022			
6.	Procedure to plot the Nyquist Plots	1	12-05-2022			
7.	**Tutorial-8**	1	14-05-2022			
8.	Determination of stability from Polar plots and Nyquist Plots	1	16-05-2022			
9.	Lead compensator, Lag compensator	1	17-05-2022			
10.	Lead-Lag compensator.	1	19-05-2022			
No. of classes required to complete UNIT-IV:**10**				No. of classes taken:		

UNIT-V : State Space Analysis of Continuous Systems:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Concepts of state, state variables and state model	1	21-05-2022			
2.	Derivation of state models from transfer function.	1	23-05-2022			
3.	Derivations of transfer function from state models.	1	24-05-2022			
4.	Solution of state equations	1	26-05-2022			
5.	**Tutorial-09**	1	28-05-2022			
6.	State Transition Matrix	1	30-05-2022			
7.	Computation of state transition matrix using Laplace transformation method	1	31-05-2022			
8.	Concept of Controllability	1	02-06-2022			

	& Observability					
9.	**Tutorial-10**	1	04-06-2022			
No. of classes required to complete UNIT-V:**09**				No. of classes taken:		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1	21.02.2022	09.04.2022	7W
I Mid Examinations	11.04.2022	16.04.2022	1W
II Phase of Instructions	18.04.2022	04.06.2022	7W
II Mid Examinations	06.06.2022	11.06.2022	1W
Preparation and Practicals	13.06.2022	18.06.2022	1W
Semester End Examinations	20.06.2022	02.07.2022	2W

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	Marks
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
I-Mid Examination (Units-I & II)	M1=20
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=20
II-Quiz Examination (Units-III, IV & V)	Q2=10
Attendance	B=5
Assignment Marks = Best Four Average of A1, A2, A3, A4, A5	A=5
Mid Marks =75% of Max(M1,M2)+25% of Min(M1,M2)	M=20
Quiz Marks =75% of Max(Q1,Q2)+25% of Min(Q1,Q2)	B=10
Cumulative Internal Examination (CIE) : A+B+M+Q	40
Semester End Examination (SEE)	60
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	**Communication:** Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
PSO 2	**VLSI and Embedded Systems:** Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools
PSO 3	**Signal Processing:** Apply the Signal processing techniques to synthesize and realize the issues related to real time applications

Course Instructor	Course Coordinator	Module Coordinator	HOD
T.Kalpana	B.Rajeswari	Dr. G L N Murthy	Dr. Y Amar Babu

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr. P. Venkat Rao
Course Name & Code : Cellular and Mobile Communications
L-T-P Structure : 3-0-0 Credits : 3
Program/Sem/Sec : B.Tech., ECE., VI-Sem., Sections- C A.Y : 2021-22

PRE-REQUISITE: Analog and Digital Communication Systems, Antennas.

COURSE EDUCATIONAL OBJECTIVES (CEOs): This course provides the knowledge on basic operation of cellular systems, various techniques to improve the capacity of a cellular system, types of fading and its effects on the radio signal. This course will give an idea about various methods to reduce co-channel and adjacent channel interference. It also provides brief knowledge of Hand-off mechanism, multiple access techniques and digital cellular systems.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	**Understand** the concepts of cellular systems, interferences, frequency reuse, Handoff mechanism, frequency management and channel assignment strategies in cellular systems.
CO 2	**Apply** time ,frequency and code division multiple access techniques to digital cellular systems
CO 3	**Evaluate** co-channel and non co-channel interferences in cellular systems
CO 4	**Analyze** the radio propagation losses at cell site and mobile antennas

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	1	-	-	-	-	-	-	-	-	1	2	-	-
CO2	3	2	2	-	-	-	-	-	-	-	-	1	2	-	-
CO3	2	2	3	-	-	-	-	-	-	-	-	2	3	-	-
CO4	1	3	1	-	-	1	-	-	-	-	-	1	3	-	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

TEXT BOOKS:

T1 Mobile Cellular Telecommunications by William.C.Y. Lee, Tata McGraw Hill, 2nd Edition, 1995.

T2 Wireless Communications by Theodore. S. Rappaport, Pearson education, 2nd Edition, 2002.

REFERENCE BOOKS:

R1 Cellular Communications Explained From Basics to 3G by Ian Poole, Elsevier Ltd, 2006.

R2 Wireless and Cellular Telecommunications by William.C.Y. Lee, McGraw Hill, 3rd Edition, 2006.

R3 Mobile Cellular Communication by G Sasibhushana Rao, Pearson Education, 1st Edition, 2012.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): ECE-C

UNIT-I: Introduction to Cellular Systems- design and capacity

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Subject & course outcomes	1	21-02-22			
2.	Basic Cellular systems- analog, digital	1	22-02-22			
3.	Operation of a Cellular system-telephone call procedure	1	25-02-22			
4.	Operational channels, performance criteria	1	28-02-22			
5.	Uniqueness of mobile radio environment	1	02-03-22			
6.	Hexagonal shaped cells, Frequency Reuse, Frequency Reuse distance	1	04-03-22			
7.	Concept of frequency Reuse channels	1	07-03-22			
8.	Co-channel-Interference Reduction Factor, desired C/I from a normal case in a omni directional Antenna system	1	08-03-22			
9.	Cell splitting, sectoring, microcell concept **Assignement-01**	1	11-03-22			
No. of classes required to complete UNIT-I: 09				No. of classes taken:		

UNIT-II: Mobile Radio Propagation and antennas

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Basics of mobile radio propagation mechanisms	1	14-03-22			
2.	Free space propagation Model-Link budget design	1	15-03-22			
3.	Outdoor Propagation models, Indoor Propagation models	1	18-03-22			
4.	Small scale multipath propagation	1	21-03-22			
5.	Factors influencing fading, types of small scale fading	1	22-03-22			
6.	Cell site antenna height, Omni directional antennas	1	25-03-22			
7.	directional antennas for interference reduction	1	28-03-22			
8.	diversity antennas, umbrella pattern antennas, Minimum separation of cell site receiving antennas	1	29-03-22			
9.	Mobile high gain antennas, Concept of sum and difference pattern. **Assignment-2**	1	01-04-22			
No. of classes required to complete UNIT-II: 09				No. of classes taken:		

UNIT-III: Interference

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Co-Channel Interference	1	04-04-22			
2.	Procedure to find nearest neighbors of a particular cell	1	05-04-22			
3.	Real time Co-Channel interference	1	08-04-22			
4.	Determination of Co-Channel interference area	1	18-04-22			
5.	Design of Antenna system	1	19-04-22			
6.	Impact on co-channel interference by lowering the antenna height	1	22-04-22			
7.	Non-co-channel interference	1	25-04-22			
8.	Different types of non co-channel interferences **Assignment-3**	1	26-04-22			
No. of classes required to complete UNIT-III: 08				No. of classes taken:		

UNIT-IV : Frequency Management, Channel Assignment, Handoff and Dropped Calls

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to frequency and channel management-Numbering and grouping,	1	29-04-22			
2.	Setup channels Access channels, paging channels	1	02-05-22			
3.	Channel assignments to cell sites and mobile units	1	06-05-22			
4.	Channel sharing and borrowing Sectorization, overlaid cells	1	09-05-22			
5.	Non-fixed channel assignment.	1	10-05-22			
6.	Handoff invitation, delaying Handoff, different types of handoff mechanisms	1	13-05-22			
7.	Dropped call rates And their evaluation **Assignment-4**	1	16-05-22			
No. of classes required to complete UNIT-IV: 07				No. of classes taken:		

UNIT-V : Multiple access Techniques and Digital Cellular Systems

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to multiple access techniques	1	17-05-22			
2.	FDMA	1	20-05-22			
3.	TDMA	1	23-05-22			
4.	CDMA	1	24-05-22			
5.	**2G**: Global System for Mobile: Important features of GSM,	1	27-05-22			
6.	**3G** Systems-Universal Mobile Telecommunications System; Wideband CDMA; CDMA 2000	1	30-05-22			
7.	Introduction to **4G & 5G** technologies **Assignment-5**	1	31-05-22			
No. of classes required to complete UNIT-V: 07				No. of classes taken:		

Contents beyond the Syllabus

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Basics of Advanced mobile phone technologies- OFDMA, LTE, NOMA ..etc	1	03-06-22			

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS:

Evaluation Task	Marks
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
I-Mid Examination (Units-I & II)	M1=20
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=20
II-Quiz Examination (Units-III, IV & V)	Q2=10
Mid Marks =75% of Max(M1,M2) + 25% of Min(M1,M2)	M=20
Quiz Marks =75% of Max(Q1,Q2) + 25% of Min(Q1,Q2)	Q=10
Assignment Marks = Average of Best Four of A1, A2, A3, A4, A5	A=5
Attendance	B=5
Cumulative Internal Examination (CIE) : M+Q+A+B	40
Semester End Examination (SEE)	60
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
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PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
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PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
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PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	**Communication:** Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
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PSO 3	**Signal Processing:** Apply the Signal processing techniques to synthesize and realize the issues related to real time applications

Date: 21-02-22

Course Instructor	Course Coordinator	Module Coordinator	HOD
(Mr. P. Venkat rao)	(Dr. Y.S.V. Raman)	(Dr. M.V. Sudhakar)	(Dr. Y. Amar Babu)

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr. Y AMAR BABU
Course Name & Code : Microprocessors and Microcontrollers – 17EC22
L-T-P Structure : 3-0-0 Credits : 3
Program/Sem/Sec : B.Tech., ECE., VI-Sem., Section-C A.Y : 2021-22

PRE-REQUISITES: Digital Circuits, Computer Organization.

COURSE EDUCATIONAL OBJECTIVES (CEOs): In this course student will learn about the Architecture of 8086 Microprocessor and 8051 Microcontroller and their Assembly Language Programming, interfacing Memory and Various Peripherals with 8086 Microprocessor/8051 Microcontroller and concepts of Interrupts and Serial Communication in reference to 8086.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	**Understand** the architecture and operation of 8086 Microprocessor & 8051 Microcontroller.
CO 2	**Apply** the instructions of 8086/8051 for various applications.
CO 3	**Analyze** the operation of peripherals and devices for different applications.
CO 4	**Design** a system by interfacing memory, peripherals and I/O devices to 8086/8051

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	-	-	-	-	-	-	-	-	-	1	-	1	-
CO2	3	3	1	-	-	-	-	-	-	-	-	2	-	2	-
CO3	2	3	3	-	-	-	-	-	-	-	-	3	-	3	-
CO4	3	3	3	-	-	-	-	-	-	-	-	3	-	3	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

TEXT BOOKS:

T1 Douglas V. Hall, "Micro Processors & Interfacing", TMH, 2007.
T2 A. K. Ray and K. M. Bhurchandi, "Advanced Microprocessor And Peripherals", 2nd Edition TMH Publishers.
T3 Muhammad Ali Mazidi, Janice Gillispie Mazidi, Rolin D. Mckinlay "Microcontrollers and Embedded System", Pearson Education Publishers, 2nd Edition

REFERENCE BOOKS:

R1 Raj Kamal, "Microcontrollers Architecture, Programming, Interfacing and System Design", Pearson Education Publishers.
R2 J. K. Uffenbeck, "The 8088 and 8086 Micro Processors", PHI, 4th Edition, 2003.
R3 Ajay Deshmukh, "Micro Controllers-Theory and Applications", Tata McGraw Hill Publishers.
R4 Kenneth J. Ayala, "The 8051 Micro Controller", Cengage Learning Publishers, 3rd Edition, 2000.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section - B

UNIT-I: Microprocessor Architecture, Instruction Set:

S. No.	Topics	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Microprocessors	1	24-02-2022			
2.	Types of µprocessors, features & comparison, µprocessor- Architecture	1	25-02-2022			
3.	General purpose registers and Special functions	1	26-02-2022			
4.	Flag register and function of Flags, Addressing modes.	1	03-03-2022			
5.	Instruction set of 8086	1	04-03-2022			
6.	Assembly language programs involving logical, Branch and Call instructions.	1	05-03-2022			
7.	Assembly language programs for Sorting and Arithmetic Expressions	1	10-03-2022			
8.	String manipulation Instructions	1	11-03-2022			
9.	Assembler directives, Procedures	1	17-03-2022			
10.	Macros, **Assignment**	1	19-03-2022			
No. of classes required to complete UNIT-I:		**10**	No. of classes taken:			

UNIT-II: 8086 Memory and I/O Interfacing:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Pin diagram of 8086	1	24-03-2022			
2.	Minimum mode of operation	1	25-03-2022			
3.	Maximum mode of operation	1	26-03-2022			
4.	Timing diagram.	1	29-03-2022			
5.	Memory interfacing to 8086	1	31-03-2022			
6.	Static RAM , EPROM and I/O interfacing to 8086	1	01-04-2022			
7.	Interrupt structure of 8086	1	07-04-2022			
8.	Interrupt service routines and Interrupt Vector table, **Assignment**	1	08-04-2022			
No. of classes required to complete UNIT-II:		**08**	No. of classes taken:			

UNIT-III: Peripherals and Devices:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	DMA Controller 8237	1	09-04-2022			
2.	Interrupt Controller 8259	1	21-04-2022			
3.	Cascading of 8259	1	22-04-2022			
4.	USART 8251	1	23-04-2022			
5.	8255 PPI Modes of operation	1	28-04-2022			
6.	Keyboard interfacing	1	29-04-2022			
7.	D/A Converter interfacing	1	30-04-2022			
8.	A/D Converter interfacing, **Assignment**	1	05-05-2022			
No. of classes required to complete UNIT-III:		**08**	No. of classes taken:			

UNIT-IV: Microcontroller:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	8051 µcontroller Architecture	1	06-05-2022			
2.	8051Pin Diagram	1	07-05-2022			
3.	Addressing modes	1	12-05-2022			
4.	8051 Instruction Set	1	13-05-2022			
5.	8051 Programs	1	19-05-2022			
6.	8051 Memory and I/O interfacing, **Assignment**	1	20-05-2022			
No. of classes required to complete UNIT-IV:		**06**	No. of classes taken:			

UNIT-V: 8051 Interfacing:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Modes of timer operation	1	21-05-2022			
2.	Serial port operation	1	26-05-2022			
3.	Interrupt structure of 8051	1	27-05-2022			
4.	Interfacing of Seven segment Displays	1	28-05-2022			
5.	Stepper Motor and Serial/Parallel Printer interfacing, **Assignment**	1	02-06-2022			
No. of classes required to complete UNIT-V:		**05**	No. of classes taken:			

Contents beyond the Syllabus

S. No.	Topics	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Advanced Microprocessors	1	03-06-2022			

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	**Marks**
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
I-Mid Examination (Units-I & II)	M1=20
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=20
II-Quiz Examination (Units-III, IV & V)	Q2=10
Mid Marks =75% of Max(M1, M2)+25% of Min(M1, M2)	M=20
Quiz Marks =75% of Max(Q1, Q2)+25% of Min(Q1, Q2)	Q=10
Assignment Marks = Average of Best Four of A1, A2, A3, A4, A5	A=5
Attendance	B=5
Cumulative Internal Examination (CIE) : M+Q+A+B	40
Semester End Examination (SEE)	60
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	**Communication:** Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
PSO 2	**VLSI and Embedded Systems:** Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools
PSO 3	**Signal Processing:** Apply the Signal processing techniques to synthesize and realize the issues related to real time applications

Date: 18-02-2022

Course Instructor	Course Coordinator	Module Coordinator	HOD
Dr. Y. Amar Babu	Mr. K Sasi Bhushan	Dr. P. Lachi Reddy	Dr. Y. Amar Babu

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr.L.Srinivas
Course Name & Code : 17MB80: Industrial Engineering & Management
L-T-P Structure : 3-0-0 Credits: 3
Program/Sem/Sec : B.Tech (ECE), VI-Sem., Section - C A.Y : 2021-22

PRE-REQUISITE: None

COURSE EDUCATIONAL OBJECTIVES (CEOs):

1. To make students understand management, its principles, contribution to management, organization, and its basic issues and types
2. To make students understand the concept of plant location and its factors and plant layout and types, method of production and work study importance
3. To understand the purpose and function of statistical quality control and material management techniques
4. To make students understand the concept of HRM and its functions
5. To make students understand PERT & CPM methods in effective project management and need of project crashing and its consequence on cost of project

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	apply management principles to the practical situations to be in a position to know which type of business organisation structure suits.
CO 2	make decisions relating to the problems in operations and production activities thereby improving the productivity by proper utilisation of input factors by designing the better working methods and with better work study techniques.
CO 3	improve quality of working through SQC techniques and to take effective decision making relating to reduce the investment in materials through better control of inventory
CO 4	manage people in working environment with the practices of HRM across corporate businesses.
CO 5	use PERT & CPM techniques in effective project management to identify critical path and try to complete projects on time as well as reducing the project durations if need arises.

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	-	-	2	2	-	-	3	-	-	-
CO2	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-
CO3	-	3	-	-	-	-	-	-	-	-	-	3	-	-	-
CO4	-	-	-	-	-	-	-	3	2	-	-	3	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	2	3	-	-	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

BOS APPROVED BOOKS:

Text Book:

T1:Dr. A.R.Aryasri, Management Science, TMH, 10th edition, 2012

Reference Books:

R1: Koontz & weihrich – Essentials of management, TMH, 10th edition, 2015
R2: Stoner, Freeman, Gilbert, Management, 6th edition Pearson education, New Delhi, 2004
R3:O.P. Khana, Industrial engineering and Management
R4:L.S.Srinath, PERT & CPM

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction class	1	22-02-2022		TLM1	
2.	**Management**-Nature and Importance	1	23-02-2022		TLM2	
3.	Management functions	1	24-02-2022		TLM2	
4.	Contributions of Taylor and Henry Fayol	1	02-03-2022		TLM2	
5.	Contribution of Elton Mayo	1	03-03-2022		TLM2	
6.	Maslow's & Herzberg's Theories	1	08-03-2022		TLM2	
7.	Douglas McGregor's theory	1	09-03-2022		TLM2	
8.	Authority, Responsibility, Centralisation and Decentralisation	1	10-03-2022		TLM2	
9.	Span of Control	1	15-03-2022		TLM2	
10.	Departmentation, Functional, Committee & Matrix Organisations	1	16-03-2022		TLM2	
11.	Line, Line and Staff organisations	1	17-03-2022		TLM2	
No. of classes required to complete UNIT-I: **11**				No. of classes taken:		

UNIT-II:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	**Operations Management:** Plant location, Factors affecting Plant location	1	22-03-2022 23-03-2022		TLM2	
2.	Plant Layout Importance & Principles	1	24-03-2022		TLM2	
3.	Types of Plant Layout	1	29-03-2022		TLM2	
4.	Methods of Production	1	30-03-2022		TLM2	
5.	Work Study Meaning & Benefits	1	31-03-2022		TLM2	
6.	Method Study: Procedure	1	06-04-2022		TLM2	
7.	Work Measurement: Procedure	1	07-04-2022		TLM2	
No. of classes required to complete UNIT-II: **8**				No. of classes taken:		

UNIT-III:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	**SQC**: Meaning, Variables and Attributes, X-bar Chart, R-bar Chart	1	19-04-2022		TLM2	
2.	C-bar Chart, P-bar Chart	1	20-04-2022		TLM2	
3.	Acceptance Sampling, Sampling Plans	1	21-04-2022		TLM2	
4.	William Edwards Deming-quality	1	26-04-2022		TLM2	
5.	Materials Management	1	27-04-2022		TLM2	
6.	Need for Inventory Control, Purchasing procedure, Stores records	1	28-04-2022			
7.	Economic Order Quantity	1	04-05-2022		TLM2	
8.	ABC analysis, Stock levels	1	05-05-2022		TLM2	
No. of classes required to complete UNIT-III: **8**				No. of classes taken:		

UNIT-IV:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	**HRM**: Concepts, Basic functions of HR manager	1	10-05-2022		TLM2	
2.	Manpower Planning	1	11-05-2022		TLM2	
3.	Recruitment, Selection, Placement, Promotions, Transfers, Separation	1	12-05-2022		TLM2	
4.	Training and Development	1	17-05-2022		TLM2	
5.	Wage and Salary Administration, Performance Appraisal	1	18-05-2022		TLM2	
6.	Job Evaluation, Merit Rating	1	19-05-2022		TLM2	
No. of classes required to complete UNIT-IV: **6**				No. of classes taken:		

UNIT-V:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Early techniques of **project management,** Network Analysis, PERT, CPM	1	24-05-2022		TLM2	
2.	Identifying critical path	1	25-05-2022		TLM2	
3.	Identifying critical path	1	26-05-2022		TLM2	
4.	Probability of completing project within given time	1	31-05-2022		TLM2	
5.	Project cost analysis	1	01-06-2022		TLM2	
6.	Project crashing	1	02-06-2022		TLM2	
No. of classes required to complete UNIT-V: **6**				No. of classes taken:		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial/ Assignment	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	Marks
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
I-Mid Examination (Units-I & II)	M1=20
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=20
II-Quiz Examination (Units-III, IV & V)	Q2=10
Attendance	B=5
Assignment Marks = Best Four Average of A1, A2, A3, A4, A5	A=5
Mid Marks =75% of Max(M1,M2)+25% of Min(M1,M2)	M=20
Quiz Marks =75% of Max(Q1,Q2)+25% of Min(Q1,Q2)	B=10
Cumulative Internal Examination (CIE) : A+B+M+Q	40
Semester End Examination (SEE)	60
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
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PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
PSO 2	Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools
PSO 3	Apply the Signal processing techniques to synthesize and realize the issues related to real time applications

Course Instructor	Course Coordinator	Module Coordinator	HOD-MBA
(Dr. L.Srinivas)	(Dr.L.Srinivas)	(Mr. U. Rambabu)	(Dr.A.Adisesha Reddy)

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT

PART – A

Name of Course Instructor : Mr. K. SASI BHUSHAN
Course Name : **MICROPROCESSORS AND MICROCONTROLLERS LAB**
Course Code : **17EC70**
L-T-P Structure : 0-2-0 Credits : 2
Program/Sem/Sec : B.Tech., ECE., VI-Sem., Sections- C A.Y : 2019-20

Pre-requisites: Pulse and switching circuits lab
Course Educational Objectives: In this course, student will understand working of instructions by practicing programs of 8086 / 8051 and develop applications by interfacing devices.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1 : **Demonstrate** program proficiency using the various instructions of the 8086 microprocessor / 8051 microcontroller.

CO 2 : **Apply** different programming techniques like loops, subroutines for various applications.

CO 3 : **Analyze** systems for different applications by interfacing external devices.

COURSE ARTICULATION MATRIX:

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	3	2	2	-	-	-	-	-	-	-	-	1	-
CO2	3	3	2	2	2	-	-	-	-	-	-	-	-	2	-
CO3	2	3	3	3	3	-	-	-	-	-	-	-	-	3	-

Note: 1- Slight (Low), **2** – Moderate (Medium), **3** - Substantial (High), no correlation **'-'**

Prescribed Syllabus:

17EC70 - MICROPROCESSORS AND MICROCONTROLLERS LAB

LIST OF EXPERIMENTS

Part-1: 8086 programs:

1. Program to demonstrate data transfer operation
2. Program to demonstrate arithmetic operation
3. Program to demonstrate logical operation
4. Program to demonstrate shift operation
5. Program to demonstrate string operation
6. Program to demonstrate looping operation
7. Program to demonstrate decision making operations

PART-2: 8051 PROGRAMS:

8. Programs to demonstrate bit-manipulation operations.
9. Programs using Interrupts
10. Programming timer / counter.
11. Programming Serial communication application.
12. Program to demonstrate decision making operations
13. Program to demonstrate looping operations

PART-3: INTERFACING PROGRAMS (using 8086 & 8051 kits)

14. Interfacing ADC
15. Interfacing DAC .
16. Interfacing stepper motor.
17. Interfacing 7-segment display.
18. Interfacing keyboard.
19. Interfacing serial/parallel Printer.

PART-: INTERFACING PROGRAMS (using 8086 & 8051 kits or MASM Tool)

20. Interfacing Programs for content beyond the syllabus.

PART – B

LAB SCHEDULE (LESSON PLAN): Section-C

LIST OF EXPERIMENTS (Minimum 12 Experiments to be conducted)

S.No.	Experiments to be conducted	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
	CYCLE-1					
1.	Program to demonstrate data transfer operation	2	23-02-2022		**TLM5&8**	
2.	Program to demonstrate arithmetic, logical and shift operations.	2	02-03-2022		**TLM5&8**	
3.	Program to demonstrate string operation.	2	09-03-2022		**TLM5&8**	
4.	Program to demonstrate looping operation.	2	16-03-2022		**TLM5&8**	
5.	Program to demonstrate decision making operations.	2	23-03-2022		**TLM5&8**	
	CYCLE-2					
6.	Programs to demonstrate bit-manipulation operations.	2	30-03-2022		**TLM5&8**	
7.	Programs using Interrupts.	2	13-04-2022		**TLM5&8**	
8.	Programming timer / counter.	2	20-04-2022		**TLM5&8**	
9.	Programming Serial communication application.	2	27-04-2022		**TLM5&8**	
10.	Program to demonstrate decision making operations.	2	04-05-2022		**TLM5&8**	
11.	Program to demonstrate looping operations.	2	11-05-2022		**TLM5&8**	
	CYCLE-3					
12.	Interfacing ADC & DAC .	2	18-05-2022		**TLM5&8**	
13.	Interfacing stepper motor.	2	25-05-2022		**TLM5&8**	
14.	Interfacing 7-segment display & keyboard.	2	01-06-2022		**TLM5&8**	
15.	Interfacing serial/parallel Printer.	2	08-06-2022		**TLM5&8**	
16.	Interfacing Programs for content beyond the syllabus.	2	08-06-2022		**TLM5&8**	
17.	Internal Examination	2	15-06-2022		**TLM5&8**	
No. of classes required to complete:		34	No. of classes conducted:			

PART – B

LAB SCHEDULE (LESSON PLAN): Section-C

LIST OF EXPERIMENTS (Minimum 12 Experiments to be conducted)

S.No.	Experiments to be conducted	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
	CYCLE-1					
1.	Program to demonstrate data transfer operation	2	26-02-2022		**TLM5&8**	
2.	Program to demonstrate arithmetic, logical and shift operations.	2	05-03-2022		**TLM5&8**	
3.	Program to demonstrate string operation.	2	12-03-2022		**TLM5&8**	
4.	Program to demonstrate looping operation.	2	19-03-2022		**TLM5&8**	
5.	Program to demonstrate decision making operations.	2	26-03-2022		**TLM5&8**	
	CYCLE-2					
6.	Programs to demonstrate bit-manipulation operations.	2	02-04-2022		**TLM5&8**	
7.	Programs using Interrupts.	2	09-04-2022		**TLM5&8**	
8.	Programming timer / counter.	2	16-04-2022		**TLM5&8**	
9.	Programming Serial communication application.	2	23-04-2022		**TLM5&8**	
10.	Program to demonstrate decision making operations.	2	30-04-2022		**TLM5&8**	
11.	Program to demonstrate looping operations.	2	07-05-2022		**TLM5&8**	
	CYCLE-3					
12.	Interfacing ADC & DAC .	2	14-05-2022		**TLM5&8**	
13.	Interfacing stepper motor.	2	21-05-2022		**TLM5&8**	
14.	Interfacing 7-segment display & keyboard.	2	28-05-2022		**TLM5&8**	
15.	Interfacing serial/parallel Printer.	2	04-06-2022		**TLM5&8**	
16.	Interfacing Programs for content beyond the syllabus.	2	11-06-2022		**TLM5&8**	
17.	Internal Examination	2	18-06-2022		**TLM5&8**	
No. of classes required to complete:		34	No. of classes conducted:			

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART – C

Academic Calendar: 2021 – 22 (VI Semester)

B.Tech VI Semester - 2019 Admitted Batch			
Class work Commence From		**21-02-2022**	
Description	**From**	**To**	**Weeks**
I Phase of Instructions	**21-02-2022**	09-04-2022	7 Weeks
I Mid Examinations	11-04-2022	16-04-2022	1 Week
II Phase Instructions	18-04-2022	**04-06-2022**	7 Weeks
II Mid Examinations	06-06-2022	11-06-2022	1 Week
Preparation & Practicals	13-06-2022	18-06-2022	1 Week
Semester End Examinations	20-06-2022	02-07-2022	2 Weeks

EVALUATION PROCESS:

Evaluation Task	**COs**	**Marks**
Day to Day work	1,2,3,4	A1=20
Attendance (>95%=5, 90-95%=4,85-90%=3,80-85%=2,75-80%=1)		A2=5
Viva-Voce	1,2,3,4	A3=5
Internal Lab Examination	1,2,3,4	B=10
Total Internal Marks(A1+A2+A3+B)		**C=40**
Semester End Examinations	1,2,3,4	**D=60**
Total Marks: C+D	1,2,3,4	**100**

PART – D

PROGRAMME OUTCOMES (POs):

PO 1:	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2:	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3:	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4:	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
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PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1:	**Communication:** Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
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PSO 3:	**Signal Processing:** Apply the Signal processing techniques to synthesize and realize the issues related to real time applications

Course Instructor	Course Coordinator	Module Coordinator	HOD
[Mr. K.Sasi Bhushan]	[Mrs. K. Balavani]	[Dr.P.Lachi Reddy]	[Dr.Y.Amar Babu]

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L.B. REDDY NAGAR, MYLAVARAM, KRISHNA DIST., A.P.-521 230.

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: P JAGADEESWARA RAO
Course Name & Code **:** OOP THROUGH JAVA LAB & 17CI65
L-T-P Structure **: 0-0-3** **Credits:** 01
Program/Sem/Sec : B.Tech-ECE /VI/C **A.Y.:** 2021-22

PREREQUISITE: Programming for Problem Solving Using C and Data Structures

COURSE EDUCATIONAL OBJECTIVE(CE0):
The objective of the course is to learn the constructs of the Java programming language along with built-in facilities to create different applications such as console & graphical user interfaces. They will be applying knowledge of object-oriented programming, collection framework to perform all operations on data.

COURSE OUTCOMES (CO):
CO1: Implement and Test the concepts of OOP in program design with a few example exercises. **(Apply - L3)**
CO2: Implement and Test the performance of Exception handling, Multithreading concepts with a few example exercises. (**Apply - L3**)
CO3: Implement and Test the performance of GUI based applications using AWT, Swings. (**Apply - L3**)

COURSE ARTICULATION MATRIX (Correlation between Cos, Pos & PSOs):

Cos	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO2	-	3	-	-	-	-	-	-	-	-	-	-	-	3	-
CO3	-	1	2	-	-	-	-	-	-	-	-	-	-	3	-

Note: 1- Slight (Low), **2 -** Moderate (Medium), **3 -** Substantial (High)

PART-B:

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion		Actual Date of Completion		HOD Sign
			Batch-1	Batch-2	Batch-1	Batch-2	
1.	Introduction Lab	3	23/02/2022	26/02/2022			
2.	Basic control structures and loops	3	02/03/2022	05/03/2022			
3.	Recursion	3	09/03/2022	19/03/2022			
4.	Arrays	3	16/03/2022	26/03/2022			
5.	Constructors and Method Overloading	3	23/03/2022	09/04/2022			
6.	String & StringBuffer classes	3	30/03/2022	23/04/2022			
7.	Inheritance, super & final Keywords	3	06/04/2022	30/04/2022			
8.	Runtime Polymorphism	3	20/04/2022	07/05/2022			
9.	Packages & Interfaces	3	27/04/2022	21/05/2022			
10.	Exception handling & Multithreading	3	04/05/2022	28/05/2022			
11.	Applets & Event handling	3	11/05/2022	01/06/2022			
12.	AWT Components & Layout Managers & Swings	3	18/05/2022	04/06/2022			
13.	Lab Internal Exam	3	25/05/2022				

PART-C

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
PSO 2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 3	To inculcate an ability to analyze, design and implement database applications.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	Mr. P Jagadeeswara Rao	Mr. S. Nagarjuna Reddy	Dr.Y.V.Bhaskar Reddy	Dr. D. Veeraiah
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC & NBA (Under Tier - I) ISO 9001:2015 Certified Institution

Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PROGRAM : ECE,VI-Sem

ACADEMIC YEAR : 2021-22

COURSE NAME & CODE : **JAVA PROGRAMMING & 17CI07**

L-T-P STRUCTURE : 3-0-0

COURSE CREDITS : 3

COURSE INSTRUCTOR : Mr. P Jagadeeswara Rao

COURSE COORDINATOR : Mr. S Nagarjuna Reddy

1. Pre-requisites:

- C , C++ Programming
- Need to know basics of programming language, data types and using loops instructions
- Basic need of Java for quick learning and understanding is Knowledge of basic programming like C/C++

2. Course Educational Objectives (CEOs):

- Concentrates on the methodological and technical aspects of software design and Programming based on OOP.
- Acquire the basic knowledge and skills necessary to implement object-oriented Programming techniques in software development through JAVA.
- Know about the importance of GUI based applications and the development of those Applications through JAVA.
- Get sufficient knowledge to enter the job market related to Web development.

3. Course Outcomes (COs): At the end of the course, the student will be able to:

CO1: Identify Object Oriented concepts through constructs of JAVA.

CO2: Understand the importance of Packages, Interfaces and implement Exception Handling Mechanism.

CO3: Explore the concepts of Exception Handling,Multi-threading

CO4: Design GUI based applications using Applet class and explore the concept of Event Handling using JAVA.

CO5: Design some examples of GUI based applications using AWT controls and Swings.

4. Course Articulation Matrix (Correlation between COs&POs,PSOs):

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	1	2-	-	-	-	-	-	-	-	-	1	3	-	1
CO2	2	3	2	-	1	-	-	-	-	-	-	1	3	-	1
CO3	3	2	3	-	1	-	-	-	-	-	-	1	3	-	1
CO4	3	2	3	-	1	-	-	-	-	-	-	1	3	-	1
CO5	3	2	2	-	1	-	-	-	-	-	-	1	3	3	1

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**

1- Slight(Low), **2 -** Moderate(Medium), **3 -** Substantial (High).

SYLLABUS

UNIT – I

Introduction: Drawbacks of POP, Object Oriented paradigm, OOP concepts.

Java Language: History of Java, Java Buzzwords, The Byte code, Simple types, Arrays, Type conversion and casting, simple java programs.

Introducing classes: Class fundamentals, declaring objects, access control and recursion, Constructors, garbage collection, Simple example programs of String and StringBuffer classes, Wrapper classes.

UNIT – II

Inheritance &Polymorphism: Inheritance basics, using super keyword, multilevel hierarchy, Method overloading, Method overriding, Dynamic method dispatch, abstract class, Object class and final keyword.

Packages: Defining a package, Accessing a Package, Understanding CLASSPATH, importing packages, exploring java.util package (StringTokenizer, date classes).

Interfaces: Defining an interface, implementing interface, applying interfaces, variables in interface and extending interfaces. Differences between classes and interfaces.

UNIT – III

Exception Handling: Exception handling fundamentals, exception types, usage of try& catch, throw, throws and finally, Java Built-in Exceptions.

Multithreading: Differences between multi-threading and multitasking, java thread model, Creating thread, multiple threads and synchronizing threads.

UNIT – IV

Applet Class: Concepts of Applets, differences between applets and applications, applet architecture, skeleton, creating applets, passing parameters to applets, working with Graphicsclass.

Event Handling: Events handling mechanisms, Events, Event sources, Event classes, Event Listeners interfaces, Delegation event model, handling mouse and keyboard events, Adapterclasses, Inner classes.

UNIT – V

AWT controls: label, button, scrollbars, text components, check box, check box groups, Choices controls, lists, scrollbar, text field, layout managers – border, grid, flow.

Introducing Swing:– Introduction, key features of swings, limitations of AWT, components &containers, swing packages, creating swing applet- JApplet class, JComponents- Labels, text fields, buttons – The JButton class, Tabbed Panes, Scroll Panes, Tables.

TEXT BOOKS

Herbert Schildt, ―Java: The complete reference‖, TMH Publications, 7th edition, 2006.

REFERENCES

1.Dr.R.NageswaraRao,―Core JAVA: An Integrated Approach‖, Dreamtech Press, 1st Edition, 2008.

2.E.Balaguruswamy,―Programming with JAVA‖, TMH Publications, 2ndEdition, 2000.

3.Patrick Niemeyer & Jonathan Knudsen, ―Learning Java‖, O'REILLY Publications, 3rd Edition, 2005.

4.Benjamin J Evans & David Flanagan,―Java–in a Nutshell – A desktop quick reference, O'REILLY Publications, 6th Edition, 2014.

5.David Flanagan, ―Java Examples In a nutshell – A Tutorial companion to java in a nutshell, O'REILLY Publications, 3rd Edition, 2004.

Course Delivery Plan

UNIT-I: Introduction to Java, Introduction to classes

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
1.	Drawbacks of POP, Object Oriented paradigm.	1	21/02/2022		TLM1	CO1	
2.	OOP concepts.	1	23/02/2022				
3.	History of Java, Java Buzzwords, The Byte code, Simple types	1	26/02/2022		TLM1	CO1	
4.	Arrays, Type conversion and casting	1	28/02/2022		TLM1	CO1	
5.	Class fundamentals, declaring objects	1	02/03/2022		TLM1	CO1	
6.	access control and recursion, Constructors	1	05/03/2022		TLM1	CO1	
7.	garbage collection, Simple example programs of String	1	07/03/2022		TLM1	CO1	
8.	StringBuffer classes, Wrapper classes	1	09/03/2022		TLM1	CO1	
	No. of classes required to complete UNIT-I	**8**			**No. of classes taken:**		

Unit-II: Polymorphism, Inheritance and Packages

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
9.	Inheritance basics, using super keyword, multilevel hierarchy	1	14/03/2022		TLM1	CO2	
10.	Method overloading	1	16/03/2022		TLM1	CO2	
11.	Method overriding, Dynamic method	1	19/03/2022				

	dispatch						
12.	abstract class, Object class and final keyword.	1	21/03/2022		TLM1	CO2	
13.	Defining, accessing a package, Understanding CLASSPATH, importing packages	1	23/03/2022		TLM1	CO2	
14.	exploring java.util package (StringTokenizer, date classes).	1	26/03/2022		TLM1	CO2	
15.	Defining an interface, implementing interface,	1	28/03/2022		TLM1	CO2	
16.	applying interfaces	1	30/03/2022				
	No. of classes required to complete UNIT-II	**08**			**No. of classes taken:**		

UNIT-III: Exception Handling and Multi Threading

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
17.	Exception handling fundamentals, exception types, usage of try& catch,	1	04/04/2022		TLM1	CO3	
18.	throw, throws and finally	1	06/04/2022		TLM1	CO3	
19.	Java Built-in Exceptions	1	09/04/2022		TLM1	CO3	
20.	**Mid-1 Exams**		11/04/2022				
21.	**Mid-1 Exams**		13/04/2022				
22.	**Mid-1 Exams**		16/04/2022				
23.	Java user defined Exceptions	1	18/04/2022		TLM1	CO3	
24.	Differences between multi-threading and multitasking	1	20/04/2022		TLM1	CO3	
25.	java thread model	1	23/04/2022		TLM1	CO3	
26.	Creating thread	1	25/04/2022				

27.	multiple threads and synchronizing threads	1	27/04/2022				
	No. of classes required to complete UNIT-III	**08**			**No. of classes taken:**		

UNIT-IV: Applet Class, Event Handling

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
28.	Concepts of Applets, differences between applets and applications	1	30/04/2022		TLM1	CO4	
29.	applet architecture, skeleton	1	02/05/2022		TLM1	CO4	
30.	creating applets, passing parameters to applets	1	04/05/2022		TLM1	CO4	
31.	working with Graphics class	1	07/05/2022		TLM1	CO4	
32.	Events handling mechanisms, Events, Event sources	1	09/05/2022		TLM1	CO4	
33.	Event classes, Event Listeners interfaces	1	11/05/2022		TLM1	CO4	
34.	handling mouse and keyboard events,	1	16/05/2022		TLM1	CO4	
35.	Adapter class, Inner classes	1	18/05/2022		TLM1	CO4	
	No. of classes required to complete UNIT-IV	**07**			**No. of classes taken:**		

UNIT-V: AWT Controls, Swing Components

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
36.	AWT controls: label, button, scrollbars, text components, check box, check box groups	1	21/05/2022		TLM1	CO5	
37.	Choices controls, lists, scrollbar, text field	1	23/05/2022		TLM1	CO5	
38.	layout managers – border, grid, flow.	1	25/05/2022		TLM1	CO5	
39.	Introducing Swing:– Introduction, key features of swings	1	28/05/2022		TLM1	CO5	
40.	limitations of AWT, components &containers, swing	1	30/05/2022		TLM1	CO5	
41.	packages, creating swing applet, JApplet class,	1	01/06/2022		TLM1	CO5	
42.	JComponents-Labels, text fields, buttons	1	04/06/2022				
43.	Mid-II Exams		06/06/2022				
44.	Mid-II Exams		08/06/2022				
45.	Mid-II Exams		11/06/2022				
	No. of classes required to complete UNIT-V	**06**			**No. of classes taken:**		

Contents beyond the Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
1.	Data types and null values Scope rules	1	05/03/2022		TLM1	CO1	
2.	Deadlock of Threads	1	27/04/2022		TLM1	CO3	
3.	Types of applets	1	01/06/2022		TLM1	CO4	

Teaching Learning Methods					
TLM1	Chalk and Talk	**TLM4**	Problem Solving	**TLM7**	Seminars or GD
TLM2	PPT	**TLM5**	Programming	**TLM8**	Lab Demo
TLM3	Tutorial	**TLM6**	Assignment or Quiz	**TLM9**	Case Study

EVALUATION PROCESS:

Evaluation Task	**COs**	**Marks**
Assignment-I (Unit-I)	1,2,3,4	A1=5
Assignment-II (Unit-II)	1,2,3,4	A2=5
I-Mid Examination (Units-I & II)	1,2,3,4	M1=20
I-Quiz Examination (Units-I & II)	1,2,3,4	Q1=10
Assignment-III (Unit-III)	1,2,3,4	A3=5
Assignment-IV (Unit-IV)	1,2,3,4	A4=5
Assignment-V (Unit-V)	1,2,3,4	A5=5
II-Mid Examination (Units-III, IV & V)	1,2,3,4	M2=20
II-Quiz Examination (Units-III, IV & V)	1,2,3,4	Q2=10
Attendance	1,2,3,4	B=5
Assignment Marks = Best Four Average of A1, A2, A3, A4, A5	1,2,3,4	A=5
Mid Marks =75% of Max(M1,M2)+25% of Min(M1,M2)	1,2,3,4	M=20
Quiz Marks =75% of Max(Q1,Q2)+25% of Min(Q1,Q2)		B=10
Cumulative Internal Examination (CIE) : A+B+M+Q	**1,2,3,4**	**40**
Semester End Examination (SEE)	**1,2,3,4**	**60**
Total Marks = CIE + SEE	**1,2,3,4**	**100**

POs:(Program Outcomes)

1. Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. Design 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.
4. Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. 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.

PEOs (Program Educational Objectives):

PE-1: To inculcate the adaptability skills into the students for software design, software development or any other allied fields of computing.
PE-2: To equip the graduates with the ability to analyze, design and synthesize data to create novel products.
PE-3: Ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.
PE-4: To empower the student with the qualities of effective communication, teamwork, continues learning attitude, leadership needed for a successful computer professional.

Mr. P Jagadeeswara Rao	Mr. S. Nagarjuna Reddy	Dr. Y V Bhaskar Reddy	Dr. D. Veeraiah
Course Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT

Part-A

PROGRAM : : B.Tech. V-Sem., ECE (C), R17 Regulations

ACADEMIC YEAR : 2021-22

COURSE NAME & CODE : PRESENTATION SKILLS - 17FE61

L-T-P STRUCTURE : **0**-0-2

COURSE CREDITS : 1

COURSE INSTRUCTOR : K. Sridevi, Asst. Pof.

B. Sreenivasareddy, Asst. Prof.

COURSE COORDINATOR : Dr. B. Samrajya Lakshmi

PRE-REQUISITES : Students should have fundamental knowledge in making conversations in English and be with readiness to speak

Course Educational Objective : To help students make oral presentations, power point presentations, participate in group discussions and write project/research/technical reports/formal letters by gathering information and organizing ideas relevantly and coherently.

Course Outcomes : At the end of the course, the student will be able to

CO1 : Make power point presentations and oral presentations
CO2 : Use standard vocabulary contextually
CO3 : Manage skillfully through group discussions.
CO4 : Negotiate skillfully for better placement.

Course Articulation Matrix:

Course		Program Outcomes (POs)											
	POs→	1	2	3	4	5	6	7	8	9	10	11	12
17FE61	CO1		1		3		2			3	3		2
	CO2		1		3		2			3	3		2
	CO3		1		3		2			3	3		2
	CO4		1		3		2			3	3		2

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

Bos Approved Lab Manual:

- Board of Editors, "ELCS Lab Manual – A Workbook of CALL and ICS Lab Activities", Orient Black Swan Pvt. Ltd., Hyderabad, 2016.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Activity	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
1.	Introduction	2	21.02.2022		TLM4		
2.	Self Introduction	2	28.02.2022		TLM4	CO1	
3.	JAM- I (prepared)	2	07.03.2022		TLM4	CO1	
4.	JAM-II (Extempore)	2	14.03.2022		TLM4	CO1	
5.	Group Discussion	2	21.03.2022		TLM4, TLM6	CO3	
6.	Group Discussion	2	28.03.2022		TLM4, TLM6	CO3	
7.	Reading Comprehension/Listening Comprehension	2	04.04.2022		TLM3	CO2	
8.	Poster Presentation	2	18.04.2022		TLM2, TLM4	CO1	
9.	Power point Presentation	2	25.04.2022		TLM2, TLM4	CO1	
10.	Vocabulary(one-word substitutes/analogy/idioms)	2	02.05.2022		TLM1, TLM3	CO2	
11.	Letter & Résumé writing	2	09.05.2022		TLM1, TLM3	CO4	
12.	Vocabulary(Synonyms/Antonyms)	2	16.05.2022		TLM1, TLM3	CO2	
13.	Mock Interviews	2	23.05.2022		TLM6	CO4	
14.	Internal Lab Exam		30.05.2022				
15.	Total	26					

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

Part - C

EVALUATION PROCESS:

According to Academic Regulations of R17 Distribution and Weightage of Marks For Laboratory Courses is as follows.

(a) Continuous Internal Evaluation (CIE):

- ✓ The continuous internal evaluation for laboratory courses (including Computer aided engineering drawing, computer aided engineering graphics, Computer aided machine drawing etc.) is based on the following parameters:

Parameter		Marks
Day – to – Day Work	Observation	10 Marks
	Record	10 Marks
Internal Test		10 Marks
Attendance		05 Marks
Viva – Voce During Regular Lab Sessions		05 Marks
Total		**40 Marks**

(b) Semester End Examinations (SEE:

- ✓ The performance of the student in laboratory courses shall be evaluated jointly by internal and external examiners for 3 hours duration as per the parameters indicated below:

Parameter	Marks

% of Attendance	Marks
≥ 95	05 Marks
90 to < 95	04 Marks
85 to < 90	03 Marks
80 to < 85	02 Marks
75 to < 80	01 Mark

Phonemes	05 Marks
Short answers on phonetics	05 Marks
Transcription	10 Marks
Dialogue writing	10 Marks
Presentation	10 Marks
Interview	20 Marks
Total	**60 Marks**

Rubrics For Evaluation of Laboratory Courses

Day-To-Day Lab (Observation) Performance Evaluation (R-17)					Record Performance Evaluation (R-17)			
S.N	**Criteria**	**Poor**	**Average**	**Good**	**Criteria**	**Poor**	**Average**	**Good**
1	Language suitability **(4 Marks)**	Wrong usage of words Grammatical errors **(2 Marks)**	Some points are missing from the data written Wrong usage of grammar & vocabulary. **(3 Marks)**	Well-written & spoken Language is error free **(4 Marks)**	Language **(4 Marks)**	Language used is not suitable Full of incorrect vocabulary **(2 Marks)**	Some words are inappropriately used / wrongly spelt **(3Marks)**	Language used is good No word/ spelling errors **(4 Marks)**
2	Content **(4Marks)**	Unable to Deliver all the pints Delivering Irrelevant point **(2 Marks)**	Some points are not given Point analysis is not upto the mark **(3 Marks)**	All the points are analysed properly More content was delivered. **(4 Marks)**	Content **(4 Marks)**	Very less points were written Points were not analysed properly **(2 Marks)**	Some of the points were missing Some points are not properly analysed **(3 Marks)**	Complete information is provided for the topic Important information is provided with illustrations/ exaamples **(4 Marks)**
3	Style of Presentation **(2 Marks)**	Inappropriate body language Improper prentation **(0 Marks)**	Prentation is not upto the mark **(1 Mark)**	Presented well with appropriate ettiquett All important conclusions have been clearly made, student shows good understanding of the topic. **(2 Marks)**	Grammar & Neatness **(2 Mark)**	Frequent grammar and/r spelling errors writing style is rough and immature **(1/2 Mark)**	Some grammatical errors **(1 Marks)**	No grammar/ spelling corrections are found and well-written **(2 Marks)**

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO1: To Attain a solid foundation in Electronics & Communication Engineering fundamentals with an attitude to pursue continuing education.
PEO2: To Function professionally in the rapidly changing world with advances in technology
PEO3: To Contribute to the needs of the society in solving technical problems using Electronics & Communication Engineering principles, tools and practices.
PEO4: To Exercise leadership qualities, at levels appropriate to their experience, this addresses issues in a responsive, ethical, and innovative manner

PROGRAMME OUTCOMES (POs)

PO1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

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 instructions.

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.

Name of the Faculty	Name of Module Coordinator	HOD
Ms. K. Sridevi Mr. B. Sreenivasareddy	Dr. B. Samrajya Lakshmi	Dr. A. Rami Reddy

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
COURSE HANDOUT

Part-A

PROGRAM : B.Tech.VI Semester, Electronics and Communication Engineering (Section-C)
ACADEMIC YEAR : 2021-22
COURSE NAME & CODE : Employability Enhancement Skills-II – 17PD08
L-T-P STRUCTURE : 1 (L) – 0 (T) -0
COURSE CREDITS : NIL
COURSE INSTRUCTOR : **Mr. T. Bala Krishna, Assistant Professor; Mrs. K. Samaikya, Assistant Professor**
COURSE COORDINATOR : **Mrs. K. Samaikya, Assistant Professor**
PRE-REQUISITES : Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs):

To develop language & communication skills to augment professional development
To inculcate industry-readiness skills among professional students
To familiarize students with elements of Quantitative techniques, Reasoning required for placement tests.
To acquaint the students with concepts and tools that will serve as building blocks for analytical thinking
To help students in career planning and professional development

COURSE OUTCOMES (COs)

At the end of the course, the student will be able to:

CO 1	To identify, analyze and apply quantitative techniques related to qualify in Placement tests.
CO 2	To effectively utilize verbal ability & communication skills to qualify in Placement tests.
CO 3	To effectively communicate in professional as well as social contexts.
CO 4	To apply key soft skills effectively in Job Interviews as well in other professional contexts.
CO 5	Inculcate lifelong learning through personal effectiveness as well as leadership.

COURSE ARTICULATION MATRIX (Correlation between Cos & POs, PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3				3	3	3				3			
CO2	3	3				3	3					3			
CO3	3		3				2					2			
CO4	3					2	3	2				3			
CO5	3	3	3	3		3	3	3				3			

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'1-** Slight(Low), **2 –** Moderate(Medium), **3 –** Substantial (High)

SYLLABUS

UNIT – I:
Verbal Ability: Tenses& Conditional Clauses
Quantitative Aptitude: Alligation or Mixture, Simple Interest and Compound Interest

UNIT – II:
Verbal Ability: Sentence Completions
Quantitative Aptitude: Time and work, Pipes and Cistern, Permutations and Combinations, Probability

UNIT – III:
Verbal Ability: Spot the Errors
Quantitative Aptitude: Time and Distance, Problems on trains, Boats and Streams, Races and Games of Skill

UNIT – IV:
Verbal Ability: Jumbled Sentences, Cloze Tests
Quantitative Aptitude: Area, Volume and Surface Areas, Progressions

UNIT – V:
Verbal Ability: Advanced Reading Comprehension
Quantitative Aptitude: Clocks and Calendars, Cubes and Dice

BOS APPROVED TEXT BOOKS:

1. Objective Arithmetic, S. CHAND Publishers.
2. R.S.AGGARWAL, *Verbal & Non-Verbal Reasoning*, S. CHAND Publishers
3. Objective English. Edgar Thorpe, Pearson Education, New Delhi.2009
4. Sanjay Kumar, Pushpa Lata: Communication skills. Oxford, Delhi, 2012
5. Vocabulary Builder for Students of Engineering and Technology (A self – study manual for vocabulary Enhancement) Y.Saloman Raju, Maruthi Publishers

BOS APPROVED REFERENCE BOOKS:

1. Meenakshi Raman, Sangeetha: Technical Communication, Oxford University Press, 2008
2. Baron's Guide on GRE
3. Vocabulary Builder for Students of Engineering and Technology (A self – study manual for vocabulary Enhancement) Y.Saloman Raju, Maruthi Publishers
4. Dinesh Khattar, *The Pearson Guide to Quantitative Aptitude*, Pearson Education
5. M. Tyra, *Magical Book on Quicker Maths*, BSC Publishers Quantitative Aptitude by Arun Sharma

Part-B
COURSE DELIVERY PLAN (LESSON PLAN): Section-A

UNIT-I:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction –Alligation or Mixture	1	22-02-2022		**TLM1**	CO1	T1, T2	
2.	Introduction to course- Tenses	1	24-02-2022		**TLM1**	CO1	T1, T2	
3.	Problems on Alligation or Mixture	1	3-03-2022		**TLM1**	CO1	T1, T2	
4.	Tenses worksheet	1	8-03-2022		**TLM1**	CO1	T1, T2	
5.	Simple Interest & Compound Interest	1	10-03-2022		**TLM1**	CO1	T1, T2	
6.	Conditional Clauses	1	15-03-2022		**TLM1**	CO1	T1, T2	
7.	Problems on Simple Interest & Compound Interest	1	17-03-2022		**TLM1**	CO1	T1, T2	
No. of classes required to complete UNIT-I:		7			No. of classes taken:			

UNIT-II:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Sentence Completion	1	22-03-2022		**TLM1**	CO2	T1, T2	
2.	Time and Work, Pipes and Cistern	1	24-03-2022		**TLM1**	CO2	T1, T2	
3.	Sentence Completion worksheet	1	29-03-2022		**TLM1**	CO2	T1, T2	
4.	Permutations and Combinations, Probability	1	31-03-2022		**TLM1**	CO2	T1, T2	
5.	Worksheet	1	07-04-2022		**TLM1**	CO2	T1, T2	
6.	**I Mid Examinations**	6 days	11-04-2022 to 16-04-2022					
No. of classes required to complete UNIT-II:		5			No. of classes taken:			

UNIT-III:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Error spotting	1	19-04-2022		**TLM1**	CO3	T1, T2	
2.	Time and Distance, Problems on Trains	1	21-04-2022		**TLM1**	CO3	T1, T2	
3.	Error spotting worksheet	1	26-04-2022		**TLM1**	CO3	T1, T2	
4.	Boats and Streams, Races and Games of Skill	1	28-04-2022		**TLM1**	CO3	T1, T2	
5.	Error spotting worksheet	1	05-05-2022		**TLM1**	CO3	T1, T2	
No. of classes required to complete UNIT-III		5			No. of classes taken:			

UNIT-IV:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Jumbled sentences	1	10-05-2022		**TLM1**	CO4	T1, T2	
2.	Area, Volumes and Surface Area	1	12-05-2022		**TLM1**	CO4	T1, T2	
3.	Jumbled sentences worksheet	1	17-05-2022		**TLM1**	CO4	T1, T2	
4.	Progressions	1	19-05-2022		**TLM1**	CO4	T1, T2	
No. of classes required to complete UNIT-IV		4			No. of classes taken:			

UNIT-V:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Advanced Reading Comprehension passages	1	24-05-2022		**TLM1**	CO5	T1, T2	
2.	Clocks & Calendars	1	26-05-2022		**TLM1**	CO5	T1, T2	
3.	Advanced Reading Comprehension passages	1	31-05-2022		**TLM1**	CO5	T1, T2	
4.	Cubes and Dice	1	02-06-2022		**TLM1**	CO5	T1, T2	
5.	**II Mid Examinations**	6 days	6-6-2022 to 11-6-2022					
No. of classes required to complete UNIT-V : 4					No. of classes taken:			

CONTENTS BEYOND THE SYLLABUS:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign
1.	Advanced Topics in Unit I	1			**TLM1**	CO1	T1, T2, R1 to R5	
2.	Advanced Topics in Unit II	1			**TLM1**	CO2		
3.	Advanced Topics in Unit III	1			**TLM1**	CO3		
4.	Advanced Topics in Unit IV	1			**TLM1**	CO4		
5.	Advanced Topics in Unit V	1			**TLM1**	CO5		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

ACADEMIC CALENDAR:

Description	From	To	Weeks
Commencement of Class Work: 21-02-2022			
I Phase of Instructions	21-02-2022	09-04-2022	7 W
I Mid Examinations	11-04-2022	16-04-2022	1 W
II Phase of Instructions	18-04-2022	04-06-2022	7 W
II Mid Examinations	06-06-2022	11-06-2022	1 W
Preparation and Practical's	13-06-2022	18-06-2022	1 W
Semester End Examinations	20-06-2022	02-07-2022	2 W

Part - C

EVALUATION PROCESS: R17 Regulation

Evaluation Task	Marks
Cumulative Internal Examination (CIE) :	100
Total Marks = CIE	100

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO1: To Attain a solid foundation in Electronics & Communication Engineering fundamentals with an attitude to pursue continuing education.
PEO2: To Function professionally in the rapidly changing world with advances in technology.
PEO3: To Contribute to the needs of the society in solving technical problems using Electronics & Communication Engineering principles, tools and practices.
PEO4: To Exercise leadership qualities, at levels appropriate to their experience, which addresses issues in a responsive, ethical, and innovative manner.

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1: Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
PSO2: Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools.
PSO3: Apply the Signal processing techniques to synthesize and realize the issues related to real time applications.

Position	***Course Instructor***	***Course Coordinator***	***Module Coordinator***	***HOD***
Name	**K.SAMAIKYA/** **T. BALA KRISHNA**	**K.SAMAIKYA**	**Dr. SUJITH KUMAR RATH**	**Dr. SUJITH KUMAR RATH**
Signature				

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L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

DEPARTMENT OF ECE

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr.A.Narendra Babu/Dr. Y.S.V.Raman
Course Name & Code : Seminar
L-T-P Structure : 0-0-2 Credits : 1
Program/Sem/Sec : B.Tech., ECE., VI-Sem., Sections- C A.Y : 2021-22

PRE-REQUISITE: Knowledge on English and basic concepts in electronics and communication engineering.

COURSE EDUCATIONAL OBJECTIVES (CEOs): This course enables the students in Reviewof literature, analyze complex engineering problems relevant to the society and industryTransforms, Analyze the insight into modern technologies, tools and systems in the field of Electronics & Communication Engineering and enhances the English communication skills.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Review literature, analyze complex engineering problems relevant to the society and industry
CO 2	Analyze the insight into modern technologies, tools and systems in the field of Electronics & Communication Engineering
CO 3	Adapt communication & Presentation skills
CO 4	Develop Report writing skills.

COURSE ARTICULATION MATRIX(Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1	-	2	2	-	-	2	-	-	3	3	3	3
CO2	1	2	2	2	3	2	-	-	2	-	-	3	3	3	3
CO3	-	-	-	-	-	-	-	-	-	3	-	3	-	-	-
CO4	-	-	-	-	-	-	-	-	-	3	-	3	-	-	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):
UNIT-I: Signal Analysis

S.No.	Seminar presentation and Report writing	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	INTRODUCTION	2	25-03-2022		**TLM1**	
2.	PLACEMENT TRAINING	2	04-03-2022			
3.	PLACEMENT TRAINING	2	11-03-2022			
4.	Seminar presentation by Roll No. 19761A04D0 - 19761A04D6	2	25/03/22		**TLM6**	
5.	Seminar presentation by Roll No. 19761A04D7 - 19761A04E3	2	5/3/22		**TLM6**	
6.	Seminar presentation by Roll No. 19761A04E4 - 19761A04F0	2	12/3/22		**TLM6**	
7.	Seminar presentation by Roll No. 19761A04F1 - 19761A04F8	2	19/3/22		**TLM6**	
8.	Seminar presentation by Roll No. 19761A04F9 - 19761A04G5	2	26/3/22		**TLM6**	
9.	Seminar presentation by Roll No. 19761A04G6 - 19761A04H2	2	2/4/22		**TLM6**	

10.	Seminar presentation by Roll No. 19761A04H3 - 19761A04H9	2	9/4/22		**TLM6**	
11.	Seminar presentation by Roll No. 19761A04I0 - 19761A04J0	2	23/4/22		**TLM6**	
12.	Seminar presentation by Roll No. 19761A04J1–207651A018	2	30/4/22		**TLM6**	
No. of classes required to complete : 26				No. of classes taken:		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	**Marks**
Survey	10
Quality of work	20
Seminar report	20
Presentation	30
Interaction	20
Total Marks:	**100**

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**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
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write

	effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	**Communication:** Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
PSO 2	**VLSI and Embedded Systems:** Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools
PSO 3	**Signal Processing:** Apply the Signal processing techniques to synthesize and realize the issues related to real time applications

Course Instructor	Course Coordinator	Module Coordinator	HOD
(Dr. A.Narendra Babu)	(Dr. T.Satyanarayana)	(Dr. B.Poornaiah)	(Dr. Y. Amar Babu)

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DEPARTMENT OF ELECTRONICS & COMMUNICATIONS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr.M.Sambasiva Reddy/Dr.T.Satyanarayana
Course Name & Code : AECEL/C
Program/Sem/Sec : B.Tech., ECE., VI-Sem, A Sec A.Y : 2021-22

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered	Roll.No. of Participants	Tentative Date of Completion	Actual Date of Completion	HOD Sign Weekly
1.	IEEE Spectrum Magazine-Any Topic from Latest Editions (Presentation/Group Discussion)	18761A0462, 19761A401 to 19761A0405	25-02-2022		
2.	Smart India Hakathon /Ideation (Presentation/Group Discussion)	19761A0406 to 19761A0410	04-03-2022		
3.	Current Affairs/Technical Talks	19761A0411 to 19761A0415	11-03-2022		
4.	Technical Quiz	19761A0416 to 19761A0420	25-03-2022		
5.	Debate on Latest Technologies	19761A0421 to 19761A0425	01-04-2022		
6.	IEEE Spectrum Magazine-Any Topic from Latest Editions (Presentation/Group Discussion)	19761A0426 to 19761A0430	08-04-2022		
7.	Smart India Hakathon /Ideation (Presentation/Group Discussion)	19761A0431 to 19761A0435	22-04-2022		
8.	Current Affairs/Technical Talks	19761A0436 to 19761A0440, 20765A0401	29-04-2022		
9.	Technical Quiz	19761A0441 to 19761A0445, 20765A0402	06-05-2022		
10.	Debate on Latest Technologies	19761A0446 to 19761A0450, 20765A0403	13-05-2022		
11.	IEEE Spectrum Magazine-Any Topic from Latest Editions (Presentation/Group Discussion)	19761A0451 to 19761A0455, 20765A0404	20-05-2022		
12.	Smart India Hakathon /Ideation (Presentation/Group Discussion)	19761A0456 to 19761A0460, 20765A0405	27-05-2022		
13.	Current Affairs/Technical Talks	19761A0461 to 19761A0464, 20765A0406	03-06-2022		

Course Instructor
(M.Sambasiva Reddy)

HOD
(Dr.Y.Amar Babu)