

Academic Course Description

BHARATH UNIVERSITY
 Faculty of Engineering and Technology
 Department of Electrical and Electronics Engineering
 BEC612PRINCIPLE OF COMMUNICATION ENGINEERING
Sixth Semester (Even Semester)

Course (catalog) description

To create awareness among the students about the different types of non-conventional energy resources and emphasize its importance.

Compulsory/Elective course: Elective for EEE students

Credit hours : 3 credits & 45Hrs

Course Coordinator : S.P.Vijayaragavan

Instructors : S.Dhivya

Name of the instructor	Class handling	Office location	Office phone	Email (domain:@bharathuniv.ac.in)	Consultation
S.Dhivya	Final year EEE	KS 304		contactdhivyaeee@gmail.com	9.00-9.50 AM

Relationship to other courses:

Pre –requisites : BEE306- Digital Electronics

Assumed knowledge : Understand and apply Boolean algebra including: de Morgan's theory, sufficiency, SOP and POS form. Obtain logic equivalences and minimize logic expressions using K-maps. Analyse and synthesize combinational logic circuits from logic gates. Understand the operation, and be able to synthesize, sequential logic and finite state machines. Describe logic hardware in VHDL for implementation and simulation.

Following courses : Nil

Syllabus Contents

UNIT 1	RADIO COMMUNICATION SYSTEM	9
Frequency spectrum- Principle of AM and FM-AM and transmitters and receivers-Introduction to microwave communication systems-Principle of satellite communication.		
UNIT II	PULSE COMMUNICATION SYSTEM	9

PAM, PPM, PDM, PCM-Delta Modulation-Differential PCM-Merit and demerits-Comparison Of pulse modulation schemes.

UNIT III DATA TRANSMISSION 9

Base band signal receiver-Error probability-Optimum and matched filter techniques coherent reception-Digital modulation system, FS, PSK-Comparison Of data transmission systems.

UNIT IV TRANSMISSION MEDIUM 9

Characteristics Of cables-Optical fibers-Effects of EM radiation – Bandwidth and noise restrictions-Statistical and measurement of random noise-Concept of multiplexing-FDM and TDM.

UNIT V TELEVISION 9

Scanning methods-B/W and Color Systems-Camera and picture tubes-Synchronization-Transmitters and receivers.

Text book(s) and/or required materials

- T1. ‘Kennedy, G , ‘Electronic Communication Systems’, McGraw Hill, 4th Edition, 1987
- T2. Simon Haykins, ‘Communication systems’, 3rd Edition, John Wiley, Inc., 1995.

Reference Books:

- R1. Taub and Schilling, ‘Principle of Communication system’, 2nd Edition, McGraw Hill, 1987.
- Bruce Carlson, A., ‘Communication Systems’, 3rd Edition, Tata McGraw Hill, 1986.

- R2. Bruce Carlson, A., ‘Communication Systems’, 3rd Edition, Tata McGraw Hill, 1986.

Computer usage:

Professional component

General	-	0%
Basic Sciences	-	0%
Engineering sciences & Technical arts	-	0%
Professional subject	-	0%
Non major elective	-	100%

Broad area : Circuit Theory | Electrical Machines| **Electronics** | Power System| Control &Instrumentation

Test Schedule

S. No.	Test	Tentative Date	Portions	Duration
1	Cycle Test-1	February 2nd week	Session 1 to 14	2 Periods
2	Cycle Test-2	March 2 nd week	Session 15 to 28	2 Periods
3	Model Test	April 3rd week	Session 1 to 45	3 Hrs
4	University Examination	TBA	All sessions / Units	3 Hrs.

Mapping of Instructional Objectives with Program Outcome

To create awareness among the students about the different types of non-conventional energy resources and emphasize its importance	Correlates to program outcome		
	H	M	L
1. To introduce about the radio communication system.		b,c,e,g,j,l	
2. To study about the coding used in communication system.	e		c,j,k
3. To study about the data communication system.	e	b,g	k
4. To study about the transmission system involved in communication system		b,e,f,g,j,l	k
5.To study about the television transmitters and receivers.	e	c,l	j

H: high correlation, M: medium correlation, L: low correlation

Draft Lecture Schedule

S.NO	Topics	Problem solving (Yes/No)	Text / Chapter
UNIT I RADIO COMMUNICATION SYSTEM			
1.	Frequency spectrum	NO	T1,T2
2.	Principle of AM	NO	
3.	Principle of FM-AM	NO	
4.	transmitters and receivers	NO	
5.	Introduction to microwave communication systems	NO	
6.	Principle Of satellite communication.	NO	
7.	Types of communication	NO	
8.	Applications of communication	NO	
9.	Real time testing	YES	
UNIT II PULSE COMMUNICATION SYSTEM			
10.	PAM	NO	T1,T2
11.	PPM	NO	
12.	PDM	NO	
13.	PCM-	NO	
14.	Delta Modulation-Differential PCM	NO	
15.	Merit and demerits-Comparison Of pulse modulation schemes.	NO	
16.	PWM	no	
17.	APPLICATIONS OF pcs	NO	
18.	Real time working	NO	
UNIT III DATA TRANSMISSION			
19.	Base band signal receiver	YES	T1,T2
20.	Error probability	YES	
21.	Optimum and matched filter techniques coherent reception	YES	
22.	Digital modulation system	YES	
23.	FS	YES	
24.	PSK	YES	
25.	Comparison Of data transmission systems	NO	
26.	Types of PSK	NO	
27.	Application of DTS	NO	
28.	Problems of DTS	YES	
UNIT IV TRANSMISSION MEDIUM			
29.	Characteristics Of cables	NO	T1,T2
30.	Optical fibers	NO	
31.	Effects Of EM radiation	NO	
32.	Bandwidth and noise restrictions	NO	

33.	Statistical and measurement of random noise	NO	
34.	Concept of multiplexing	YES	
35.	FDM	YES	
36.	TDM	YES	
37.	Types of FDM	NO	
38.	Complex of TM	YES	
UNIT V TELEVISION			
39.	Scanning methods	NO	T1,T2
40.	B/W and Color Systems	NO	
41.	Camera and picture tubes	NO	
42.	Synchronization	NO	
43.	Transmitters	NO	
44.	receivers	NO	
45.	Revolution in Television Technology	no	

Teaching Strategies

The teaching in this course aims at establishing a good fundamental understanding of the areas covered using:

- Formal face-to-face lectures
- Tutorials, which allow for exercises in problem solving and allow time for students to resolve problems in understanding of lecture material.
- Laboratory sessions, which support the formal lecture material and also provide the student with practical construction, measurement and debugging skills.
- Small periodic quizzes, to enable you to assess your understanding of the concepts.

Evaluation Strategies

Cycle Test – I	-	5%
Cycle Test – II	-	5%
Model Test	-	10%
Attendance	-	5%
Assignment	-	5%
Final exam	-	70%

Prepared by:
S .P.Vijayaragavan

Dated :

Addendum**ABET Outcomes expected of graduates of B.Tech / EEE / program by the time that they graduate:**

- a) An ability to apply knowledge of mathematics, science, and engineering fundamentals.
- b) An ability to identify, formulate, and solve engineering problems.
- c) An ability to design a system, component, or process to meet the desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- d) An ability to design and conduct experiments, as well as to analyze and interpret data.
- e) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- f) An ability to apply reasoning informed by the knowledge of contemporary issues.
- g) An ability to broaden the education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- h) An ability to understand professional and ethical responsibility and apply them in engineering practices.
- i) An ability to function on multidisciplinary teams.
- j) An ability to communicate effectively with the engineering community and with society at large.
- k) An ability in understanding of the engineering and management principles and apply them in project and finance management as a leader and a member in a team.
- l) An ability to recognize the need for, and an ability to engage in life-long learning.

Program Educational Objectives**PEO1: PREPARATION**

Electrical Engineering Graduates are in position with the knowledge of Basic Sciences in general and Electrical Engineering in particular so as to impart the necessary skill to analyze and synthesize electrical circuits, algorithms and complex apparatus.

PEO2: CORE COMPETENCE

Electrical Engineering Graduates have competence to provide technical knowledge, skill and also to identify, comprehend and solve problems in industry, research and academics related to power, information and electronics hardware.

PEO3: PROFESSIONALISM

Electrical Engineering Graduates are successfully work in various Industrial and Government organizations, both at the National and International level, with professional competence and ethical administrative acumen so as to be able to handle critical situations and meet deadlines.

PEO4: SKILL

Electrical Engineering Graduates have better opportunity to become a future researchers/ scientists with good communication skills so that they may be both good team-members and leaders with innovative ideas for a sustainable development.

PEO5: ETHICS

Electrical Engineering Graduates are framed to improve their technical and intellectual capabilities through life-long learning process with ethical feeling so as to become good teachers, either in a class or to juniors in industry.

BEC612- PRINCIPLE OF COMMUNICATIONENGINEERING

Course Teacher	Signature
S .P.Vijayaragavan	

Course Coordinator
(S .P.Vijayaragavan)

HOD/EEE

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