Academic Course Description

BHARATH UNIVERSITY

Faculty of Engineering and Technology

Department of Electrical and Electronics Engineering

BEE101 Basic Electrical and Electronics Engineering

First Semester, 2015-16 (Odd Semester)

Course (catalog) description

This course introduces to the concepts and definitions of Ohms law, KCL, KVL, power and energy. By applying Kirchhoff's current and voltage laws to circuits in order to determine voltage, current and power in branches of any circuits excited by DC voltages and current sources. Apply simplifying techniques to solve DC circuit problems using basic circuit theorems and structured methods like node voltage and mesh current analysis. This course also introduces the basic electronics components like Logic gates, Flip lops etc. This course also introduces the construction and operating principle of AC machines, DC machines, Generators and Transformers.

Compulsory/Elective course: Compulsory for all circuit branch students

Credit hours : 2 credits

Course Coordinator : Mr.K.Sakthivel, Asst. Professor

Instructors :

Name of the instructor	Class handling	Office location	Office phone	Email (domain:@ bharathuniv.ac.in	Consultation
Mr.K.SAKTHIVEL	All First Year Students	First Year Main Buliding		ksakthivelme@gmail.com	9.00-9.50 AM
Mrs.SHERINE	All First Year Students	First Year Main Buliding		Sherine07@gmail.com	12.45-1.15 PM

Relationship to other courses:

Pre –requisites **:** BPH101 Engineering Physics –I

Assumed knowledge : The students will have a physics and mathematics background obtained at a high school (or Equivalent) level. In particular, working knowledge of basic mathematics including Differentiation, integration and probability theories are assumed.

Following courses : BEE301 Circuit Theory

Computer usage: Nil

Professional component

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

Broad area : Circuit Theory | Electronics | Transmission Lines and Networks | Linear Integrated Circuits

Test Schedule

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

Mapping of Instructional Objectives with Program Outcome

To develop problem solving skills and understanding of circuit theory through the application of techniques and principles of electrical circuit analysis to common circuit problems. This course emphasizes:	Correlates to program outcome		
	H	M	L
1. To develop an understanding of the fundamental laws and elements of electric circuits.	b,c,d,j	a,f,k	e,g
2. To develop the ability to apply circuit analysis to DC and AC circuits	b,c,f	a,d,g,h	j
3. To understand the measuring instruments of electrical quantities and its constructions.	a,d,e	b,g	j,k
4. Introduce students to construction of machines.	a,d,e	b,g,h,k	f,j
5. To learn the working operation of logic gates, flip flops and registers	e	a,b,c,d,g	j,k

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

Draft Lecture Schedule

Session	Topics	Problem solving (Yes/No)	Text / Chapter
UNIT I	**ELECTRIC CIRCUITS**		
1.	Circuit elements, Ohms Law	Yes	[T1]
2.	Kirchhoff's Law – V-I Relationship of R,L and C	Yes	
3.	Series parallel combination of R, L&C	No	
4.	mesh current & node voltage method	Yes	
5.	superposition theorem	Yes	
6.	Thevenin's theorem	Yes	
7.	Norton's Theorem -Problems.	Yes	
UNIT II	**ELECTRICAL MACHINES**		
8.	Construction of DC motor	No	[T1]
9.	Principle of operation DC motor	No	
10.	Basic Equations and applications of DC machines	Yes	
11.	Construction and operation of DC generator	No	
12.	Single phase Induction Motor	No	
13.	Single Phase Transformer	No	
UNIT III	**BASIC MEASUREMENT SYSTEMS**		
14.	Introduction to Measurement Systems	No	[T1]
15.	Construction and Operating principles of PMMC	No	
16.	Construction and Operating principles of PMMI-Moving Iron	No	
17.	Dynamometer Wattmeter	No	
18.	power measurement by three-watt meter	No	
19.	two watt method – and Energy meter.	No	
UNIT IV	**SEMICONDUCTOR DEVICES**		
20.	Basic Concepts of semiconductor devices	No	[T1]
21.	PN Junction Diode Characteristics and its Applications	No	
22.	HWR, FWR	No	
23.	Zener Diode	No	
24.	BJT- CB, CE, CC configuration	No	
UNIT V	**DIGITAL ELECTRONICS**		
25.	Number system	No	[T1]
26.	Logic Gates	No	
27.	Boolean Algebra	No	
28.	De-Morgan's Theorem	No	
29.	Half Adder & Full Adder	No	
30.	Flip Flops	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	-	10%
Cycle Test – II	-	10%
Model Test	-	25%
Attendance	-	5%
Final exam	-	50%

Prepared by: K.Sakthivel, Assistant professor , Department of EEE **Dated : 10 -7-2017**

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

(b) an ability to design and conduct experiments, as well as to analyze and interpret data

(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

(d) an ability to function on multidisciplinary teams

(e) an ability to identify, formulate, and solve engineering problems

(f) an understanding of professional and ethical responsibility

(g) an ability to communicate effectively

(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

(i) a recognition of the need for, and an ability to engage in life-long learning

(j) a knowledge of contemporary issues

(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Program Educational Objectives

PEO1: Graduates will gain knowledge regarding the various laws and principles associated with electrical systems.

PEO2: Graduates will gain knowledge regarding electrical machines and apply them for practical problems.

PEO3: Graduates will gain knowledge on electronic systems and various types' semiconductors.

PEO4: Graduates will acquire knowledge in using the concepts in the field of electrical engineering and digital electronics.

Course Teacher	Signature
Mr.K.Sakthivel	

Course Coordinator	Academic Coordinator	Professor In-Charge	HOD/EEE
(Mr.K.Sakthivel)	( )	(Dr.)	(Dr.S.Prakash)