



MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

COURSE PLAN

Department

:

Electronics and Communication Engineering

Course Name & code

:

Basic Electronics , ECE 1071

Semester & branch

:

II, ECE

Name of the faculty

:

1. Dr. Ananthakrishna T

2. Dr. Aparna U

3. Dr. Yashwanth N

No of contact hours/week:

L	T	P	C
3	0	0	3

Course Outcomes (COs)

At the end of this course, the student should be able to:

		No. of Contact Hours	Marks
CO1:	Describe the characteristics of various electronic devices and analyze simple circuit applications using them	6	17
CO2:	Analyze rectifier circuits, voltage regulator and Amplifier	7	20
CO3:	Discuss Op-Amp and its basic applications using suitable circuits	5	14
CO4:	Simplify Boolean expressions and implement simple digital circuits using logic gates.	12	33
CO5:	Describe the principles of analog and digital communication.	6	16
Total		36	100

Assessment Plan

Components	Continuous Assessment	In-Semester Examination 1 & 2	End-Semester Examination
Duration	1 week per assignment	60 minutes	180 minutes
Weightage	20% (20 marks)	30% (15 marks each)	50% (50 marks)
Typology of Questions	Knowledge/ Recall; Understanding/ Comprehension; Application; Analysis	Understanding/ Comprehension; Application; Analysis	Understanding/ Comprehension; Application; Analysis
Pattern	Answer all questions uploaded to the LMS platform	MCQs for 5 marks and 2/3 marks question for a total of 10 marks	Answer all 5 full questions of 10 marks each.
Schedule	A1:29-10-22; A2:12-11-22 A3: 19-11-22; A4: 10-12-22 Questions will be uploaded on the dates mentioned above. A total of 4 online submissions with 5 marks each. Submission will be one week from the date of uploading the questions. (5-11-22; 19-11-22; 26-11-22; 17-12-22)	6 th and 12 th week of the academic calendar	Starting from 2 Jan 2023
Topics Covered	L 1 onwards (CO1-5)	Comprehensive examination covering In-sem exam 1: L 1-8 In-sem exam 2: L 9-21 Students are expected to answer all questions (CO1-4)	Comprehensive examination covering full syllabus. Students are expected to answer all questions (CO1-5)

Lecture Plan

L. No./ T. No.	Topics	Course Outcome Addressed
L0	Introduction to Basic Electronics	-
L1	Discussion of Junction Diode and V-I characteristics.	1
L2	Equivalent circuit of Junction Diode. Breakdown phenomenon in diodes, Zener diode.	1
L3	Rectifiers: Discussion of half wave rectifiers.	2
L4	Discussion of center tapped full wave rectifiers.	2
L5	Discussion of bridge rectifier, Capacitor filters	2
L6	Zener regulator and regulated power supplies	2

L7	Special diodes - LEDs, Photo diodes and their applications.	1,2
L8	Block diagram and characteristics of op-amp.	3
L9	Op-amp Inverting amplifier, non- inverting amplifier. derivation	3
L10	Op-amp adder, subtractor. both	3
L11	Op-amp integrator and differentiator.	3
L12	Op-amp based Comparator and square wave generator.	3
L13	Discussion of Number systems: Decimal, binary, octal and Hexadecimal number systems.	4
L14	One's and two's complements, subtraction using complements	4
L15	Weighted and non-weighted codes, Self-complimenting codes, error detecting and correcting codes.	4
L16	Boolean algebraic theorems and simplification of Boolean expressions.	4
L17	Logic gates: OR, NOT, AND, NOR, NAND , XOR and XNOR. Concept of Universal Logic.	4
L18	Implementation of Boolean expressions using logic gates,	4
L19	Standard forms of Boolean expressions- POS and SOP.	4
L20	Simplification of Boolean expressions using K-map.	4
L21	Multiplexers and Demultiplexers	4
L22	Sequential circuits- Discussion of SR flip flop, JK flip flop.	4
L23	D-flip flop and T flip flop.	4
L24	Applications of flip flops- Simple binary counters and shift registers.	4
L25	Introduction to communication, Need for modulation.	5
L26	Amplitude and Frequency modulation concepts, Principle and block diagram	5
L27	Comparison of AM and FM.	5
L28	Basic principle of Sampling and digitization. Block schematic of general digital communication system.	5
L29	Qualitative discussion of pulse modulation schemes - PAM, PPM and PWM and digital modulation schemes – ASK,PSK, FSK.	5
L30	Principle of Cellular mobile communication and architecture of GSM.	5
L31	Structure and operation of NMOS, V-I Characterestics, Regions of operation.	1
L32	Channel length modulation, Small-Signal Model	1
L33	Structure and Operation of PMOS	1

L34	Amplifier Biasing Techniques	1
L35	Amplifier Configurations,	2
L36	CS Amplifier working principle and frequency response	2

References:

1. Robert L. Boylestad, Louis Nashelsky- Electronic Devices & Circuit Theory, 11th Edition, PHI, 2012
2. Behzad Razavi, "Fundamental of Microelectronics", Wiley, 2013.
3. Morris Mano- Digital design, Prentice Hall of India, Third Edition, 2013.
4. George Kennedy, Bernad Davis- Electronic Communication Systems, Fourth edition, TMH, 2004.
5. Raj Pandya, "Mobile and Personal Communication Services and Systems", Wiley-IEEE Press, 1999

Submitted by:

Dr. Ananthakrishna T, Dr. Aparna U & Dr. Yashwanth N

(Signature of the faculty)

Date: 14-02-2023

Approved by:

Dr. Kumara Shama

(Signature of HOD)

Date: 14-02-2023

FACULTY MEMBERS TEACHING THE COURSE:

FACULTY NAME	SECTION
Dr. Anitha H	A
Jagadeesh Chandra R.B	B
Dr.Aparna U	C
Shashi Kumar G S	D

Dr. R Vinoth	E
Navya K T	F
Shreeharsha K G	G
Divya B	H
Suhas K	I
Akshatha K R	J
Soumya S	K
Dr. Yashwanth N	L