Appendix - C

GOPALAN COLLEGE OF ENGINEERING AND MANAGEMENT

Department of Electronics and Communication Engineering

Academic Year: **2017-18** Semester**: EVEN**

COURSE PLAN

Semester:**I V** Subject Code& Name: **15EC42 & Microprocessors**

Name of Subject Teacher: **VISHALSKSHI B. HIREMANI**

Name of Subject Expert (Reviewer): **KAVITHA M. V.**

For the Period: From: 06-02-17 to 02-06-17

Details of Book to be referred:

Text Books	**T1. Advanced Microprocessors and Peripherals** - A.K. Ray and K.M. Bhurchandi, TMH, 3rd Edition, 2012, ISBN 978-1-25-900613-5.
Reference Books	**R1. Microprocessor and Interfacing- Programming & Hardware**, Douglas hall, 2nd edition TMH, 2006. **R2. The Intel Microprocessor, Architecture, Programming and Interfacing** - Barry B. Brey, 6e, Pearson Education / PHI, 2003. **R3. Microcomputer systems-The 8086 / 8088 Family** – Y.C. Liu and A. Gibson, 2nd edition, PHI - 2003.

Lecture NO	Topic Planned	Practical Applications & Brief objectives	Book referred with Pg No.	Planned Date	Executed Date	Deviation Reasons thereof	How Made Good / Reciprocate arrangement	Remarks by HOD
1.	Introduction to the subject			06-02-17				

2.	**Module -1** **8086 PROCESSORS:** Historical background	**Applications:** Instrumentation: Frequency counters function generators; frequency synthesizers, spectrum analyzer and many other instruments are available where microprocessors are used as controller. **Objectives:** to discuss the evolution of processors and brief about the microprocessor based PC system, 8086 processor. To discuss the instruction set of 8086 with example programs. **Outcomes:** The student will be able to tell the history of processor and will know the details of every blocks of microprocessor based PC model and 8086 processor. The student will be able	R2 1	07-02-17				
3.	The microprocessor based personal computer system,		R2 17	08-02-17				
4.	Van Neumann and Harvard Architecture,		R2 4	09-02-17				
5.	RISC & CISC processor architecture,		R1 1.9	10-02-17				
6.	8086 CPU Architecture,		T1 3	13-02-17				
7.	Machine language instruction formats,		T1 38	14-02-17				
8.	Machine language instruction formats,		R2 38	15-02-17				
9.	Addressing modes,		R2 41	15-02-17				
10.	Addressing modes,		R2 41	16-02-17				
11.	Instruction execution timing.		R1 4.28	20-02-17				
12.	**INSTRUCTION SET OF 8086:** Data transfer instructions		R2 111	22-02-17				
13.	Illustration of Data transfer instructions with example programs.		R2 112	22-02-17				
14.	arithmetic instructions. Illustration of these instructions with example programs.		R2 156	23-02-17				
15.	Illustration of arithmetic instructions with example programs.		R2 156	27-02-17				
16.	Illustration of these instructions with example programs.		R2 156	01-03-17				

17.	**Test on module-1**	to understand the instructions used in 8086 and be able to program for small applications		01-03-17				
18.	**Module -2** **BYTE AND STRING MANIPULATION:** Branch type instructions	**Applications:** Control: Microprocessor based controllers are available in home appliances, such as microwave oven, washing machine etc. **Objectives:** To discuss the complete instruction set of 8086 with example programs. **Outcomes:** The student will be able to understand the instructions used in 8086 and be able to program for small applications	R2 130, 186	02-03-17				
19.	Loop instructions		R2 206	03-03-17				
20.	NOP & HALT instructions Illustration of these instructions with example		R2 217	06-03-17				
21.	flag manipulation instructions Illustration of these instructions with example		R2 192	08-03-17				
22.	logical instructions Illustration of these instructions with example		R2 175	08-03-17				
23.	shift and rotate instructions Illustration of these instructions with example		R2 182	08-03-17				
24.	String instructions Illustration of these instructions with example		R2 130,186	13-03-17				
25.	String instructions Illustration of these instructions with example		R2 130,186	15-03-17				
26.	REP Prefix Illustration of these instructions with example		R2 131	15-03-17				
27.	Procedures Illustration of these instructions with example		R2 208	16-03-17				

28.	Procedures Illustration of these instructions with example		R2 208	17-03-17				
29.	Directives Illustration of these instructions with example		R2 143	20-03-17				
30.	Directives Illustration of these instructions with example		R2 143	22-03-16				
31.	operators Illustration of these instructions with example		R2 120	22-03-16				
32.	operators Illustration of these instructions with example		R2 120	23-03-16				
33.	**Test on module-2**			27-03-16				
34.	**MODULE – 3** **8086 INTERRUPTS:** Introduction to stack	**Applications:** Microprocessors are used in: Calculators, Accounting system, Games machine, Complex Industrial Controllers **Objectives:** to discuss interrupt concepts, different types and examples. **Outcomes:** The student will be able to list out different	R2 60	30-03-16				
35.	stack structure of 8086,		R2 89,124	31-03-16				
36.	Introduction to interrupts		R2 213	03-04-16				
37.	8086 Interrupts ISR, NMI, INTR,		R2 214	05-04-16				
38.	Interrupt programming,		R2 216	05-04-16				
39.	Passing parameters to procedures,		R2 208	06-04-16				
40.	Interrupt examples,		R2 482	07-04-16				

41.	Macros	types of interrupts and how they function.	R2 257	10-04-16				
42.	Timing and Delays		R1 4.28	12-04-16				
43.	**Basic Peripherals and their Interfacing with 8086 (Part 1):** Semiconductor Memory Interfacing		R1 8.1	12-04-16				
44.	Static RAM Interfacing of 8086,		R2 332	13-04-16				
45.	Interfacing I/O ports,		R2 377	20-04-16				
46.	8255 PPI,		R2 395	21-04-16				
47.	Modes of operation.		R2 398	24-04-16				
48.	Modes of operation.		R2 398	26-04-16				
49.	**Test on module-3**			26-04-16				
50.	**MODULE – 4 Basic Peripherals and their Interfacing with 8086 (Part 2):** Interfacing ADC,	**Applications:** office automation and publication: word processing, spread sheet operations, storage etc **Objectives:** To discuss 8086 interfacing to keyboard, stepper	R2 442	27-04-16				
51.	Interfacing DAC,		R2 440	28-04-16				
52.	Stepper Motor Interfacing,		T1 228	03-05-16				
53.	Keyboard Interfacing,		R2 259	03-05-16				

54.	Keyboard Interfacing,	motor and segment display. **Outcomes:** The student will be able to understand how the 8086 interfacing with various device is done and how it is programmed.	R2 259	04-05-16				
55.	Seven Segment Display Interfacing.		R2 383	05-05-16				
56.	Seven Segment Display Interfacing.		R2 383	08-05-16				
57.	Signal Descriptions of 8086,		T1 8	10-05-16				
58.	Timing diagrams,		R2 315	10-05-16				
59.	Minimum Mode of 8086.		T1 21	11-05-16				
60.	Maximum Mode of 8086.		T1 25	12-05-16				
61.	**MODULE – 5** **8086 BASED MULTIPROCESSING SYSTEMS:** Coprocessor configurations,	**Applications:** The use of microprocessor in toys, entertainment equipment and home applications is making them more entertaining and full of features. **Objectives**: to discuss about the 8087 co processor, its instruction set and few example programs. **Outcomes**: The	R2 531	18-05-16				
62.	The 8087 numeric data processor: data types,		R2 532	19-05-16				
63.	processor architecture,		R2 536	22-05-16				
64.	processor architecture,		R2 536	23-05-16				
65.	instruction set and		R2 541	24-05-16				
66.	instruction set and		R2 541	24-05-17				

67.	simple program examples.	student will be able to program using 8087 instructions.	R2 565	25-05-17				
68.	**Bus Interface and Higher bit Processors Introduction:** Features of Peripheral component interconnect (PCI) bus,		R2 602	26-05-17				
69.	the universal serial bus (USB).		R2 617	27-05-17				
70.	Introduction to 80286 to Pentium processors.		R2 670	27-05-17				
71.	Revision of module 1			29-05-17				
72.	Revision of module 2			30-05-17				
73.	Revision of module 3			31-05-17				
74.	Revision of module 4			01-06-17				
75.	Revision of module 5			02-06-17				

Prepared By:Vishalakshi B. Hiremani_ Reviewed by: Kavitha M V Approved by: Kavitha M V Approved by: Dr. Pouly Thomus
(Faculty) (Sub. expert) (HOD) (Principal/ Acad. Co)
Date & Sign_____ Date & Sign_____ Date & Sign _____ Date & Sign _____