*#132, AECS Layout, IT Park Road, Kundalahalli, Bangalore – 560 037*
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**CMR INSTITUTE OF TECHNOLOGY**

Session wise – Course Plan

## Department of Telecommunication Engineering

SEMESTER : VII
BRANCH : TCE
SUBJECT : CCN
SUBJECT CODE : 10EC71
NO OF HRS/WK: 5

NAME OF THE FACULTY : SHARMILA KP
DATE OF COMMENCEMENT : 16.07/2017
DATE OF CLOSING : 9.11.2017
CLASS STRENGTH : 55
TOTAL HRS : 52

| Session No | Chapter no (No of hrs planed for the chapter) | DATE | Topics planned for the session | Teaching Aids | Assignments/ Tests planned for the chapter | Topics covered As per plan |
|---|---|---|---|---|---|---|
| 1. | **UNIT-1 Introduction to computer network** | **16/8** | Introduction, Layered tasks, OSI Model | Board, chalk, duster | | |
| 2. | | **17/8** | TCP/IP suite, | ,, | | |
| 3. | | **18/8** | Addressing | ,, | | |
| 4. | | **19/8** | Telephone and cable networks for data transmission | | | |
| 5. | | **21/8** | Telephone network | | | |
| 6. | | **22/8** | Dial up modem | | | |
| 7. | | **23/8** | DSL | | | |
| 8. | | **24/8** | Cable TV for data transmission | | | |

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|---|---|---|---|---|---|---|
| 9. | **UNIT-2 Data link control** | **28/8** | Introduction, Framing | | | |
| 10 | | **29/8** | Flow and error control | | | |
| 11 | | **30/8** | Protocols | | | |
| 12 | | **31/8** | Noiseless channels | | | |
| 13 | | **1/9** | Noisy channel | | | |
| 14 | | **4/9** | HDLC | | | |
| 15 | **UNIT-3 Multiple access** | **5/9** | Introduction, CSMA | | | |
| 16 | | **6/9** | CSMA/CD | | | |
| 17 | | **7/9** | ALOHA | | | |
| 18 | | **8/9** | Random access | | | |
| 19 | | **9/9** | Controlled access | | | |
| 20 | | **11/9** | Channelization | | | |
| 21 | | **12/9** | TDMA, FDMA, CDMA | | | |
| 22 | **UNIT-4 Wired LAN** | **13/9** | Introduction, Ethernet | | | |
| 23 | | **14/9** | IEEE standards | | | |
| 24 | | **15/9** | Standard Ethernet | | | |
| 25 | | **22/9** | Changes in the standards | | | |
| 26 | | **23/9** | Fast Ethernet | | | |
| 27 | | **25/9** | Giga bit Ethernet | | | |
| 28 | | **26/9** | Wireless LAN | | | |
| 29 | | **27/9** | IEEE 802.11 | | | |

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| 30 | **UNIT-5 Connecting LAN** | **28/9** | Introduction, HUB, Repeater | | | |
| 31 | | **3/10** | Bridges | | | |
| 32 | | **4/10** | Routers | | | |
| 33 | | **6/10** | Gateways | | | |
| 34 | | **7/10** | Backbone networks | | | |
| 35 | | **9/10** | Virtual LAN | | | |
| 36 | | **10/10** | Membership and configuration | | | |
| 37 | | **11/10** | Introduction, Logical addressing | | | |
| 38 | **UNIT-6 Network layer** | **12/10** | Introduction, IPV4 | | | |
| 39 | | **13/10** | IPV6 | | | |
| 40 | | **14/10** | Comparison | | | |
| 41 | | **16/10** | Transition from IPV4 to IPV6 | | | |
| 42 | | **17/10** | Tunneling, dual stack | | | |
| 43 | **UNIT-7 Delivery** | **23/10** | Introduction, Forwarding | | | |
| 44 | | **24/10** | Unicast routing protocols | | | |
| 45 | | **25/10** | Distance vector routing protocol | | | |
| 46 | | **26/10** | Link state routing protocol | | | |
| 47 | | **27/10** | Multicast routing protocol | | | |
| 48 | | **28/10** | Comparison | | | |
| 49 | | **30/10** | Numerical problems based on routing | | | |
| 50 | **UNIT-8 Transport layer** | **31/10** | Introduction, Process to process delivery | | | |
| 51 | | **2/11** | UDP | | | |

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|---|---|---|---|---|---|---|
| 52 | | **3/11** | TCP | | | |
| 53 | | **4/11** | DNS | | | |
| 54 | | **9/11** | Resolution | | | |
| 55 | | **10/11** | Revision | | | |
| 56 | | **11/11** | Revision | | | |
| 57 | | **13/11** | Revision | | | |
| 58 | | **14/11** | Revision | | | |
| 59 | | **15/11** | Revision | | | |
| 60 | | **16/11** | Revision | | | |
| 61 | | | | | | |
| 62 | | | | | | |

Signature of faculty Signature of HOD

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CMR
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CO-PO and CO-PSO MAPPING

**Department of Telecommunication**

SEMESTER : VII
BRANCH : TCE
SUBJECT : OFC
SUBJECT CODE : 10TE72
NO OF HRS/WK : 4

NAME OF THE FACULTY : S.Sujatha
DATE OF COMMENCEMENT : 07.08.2017
DATE OF CLOSING : 25.11.2017
CLASS STRENGTH : 101
TOTAL HRS : 60

| Session No | Chapter no (No of hrs planed for the chapter) | DATE | Topics planned for the session | Teaching Aids | Assignments/ Tests planned for the chapter | Topics covered As per plan |
|---|---|---|---|---|---|---|
| 1 | **1/1** | 7.08.17 | Introduction, historical development, General system, Advantages, Disadvantages, | Board, chalk, duster | | |
| 2 | **2/1** | 8.08.17 | Application of Optical fiber communication | ,, | | |
| 3 | **3/1** | 9.08.17 | Optical fiber waveguides: Ray theory, Cylindrical fiber, | ,, | | |
| 4 | **4/1** | 10.08.17 | Single mode fiber | ,, | | |
| 5 | **5/1** | 11.08.17 | Cut-off wavelength, mode filed diameter | ,, | | |
| 6 | **6/1** | 9.08.17 | Optical fibers: Fiber materials | ,, | | |
| 7 | **7/1** | 11.08.17 | Photonic crystal, Fiber optic cables specialty fiber | ,, | Assignment- I | |
| 8 | **1/2** | 12.08.17 | Introduction, Attenuation, Absorption | Board, chalk, duster | | |
| 9 | **2/2** | 16.08.17 | Scattering losses | ,, | | |
| 10 | **3/2** | 17.08.17 | Bending losses | ,, | | |

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|---|---|---|---|---|---|---|
| 11 | **4/2** | 18.08.17 | Dispersion ( Intermodal, Intra modal) | ,, | | |
| 12 | **1/3** | 19.08.17 | Introduction, LEDs, LASER Diodes | ,, | | |
| 13 | **2/3** | 21.08.17 | Photo Detectors, , | ,, | Assignment -II | |
| 14 | **3/3** | 22.08.17 | Photo Detector noise | ,, | | |
| 15 | **4/3** | 23.08.17 | Response time, | | | |
| 17 | **5/3** | 24.08.17 | Double Hetero junction structure | | | |
| 17 | **6/3** | 28.08.17 | Photo diodes | | | |
| 18 | **7/3** | 29.08.17 | comparison of photo detectors | ,, | | |
| 19 | **6/3** | 30.08.17 | Introduction, Fiber alignment | ,, | Assignment –III | |
| 20 | **1/4** | 31.8.17 | joint loss | ,, | | |
| 21 | **2/4** | 4.09.17 | Single mode fiber joints | ,, | | |
| 22 | **3/4** | 5.09.17 | fiber splices | ,, | | |
| 23 | **4/4** | 6.09.17 | Fiber connectors | | | |
| 24 | **5/4** | 7.09.17 | Fiber couplers | Board, chalk, duster | | |
| 25 | **1/5** | 09.09.17 | Introduction, Optical Receiver operation | ,, | | |
| 26 | **2/5** | 11.09.17 | Receiver sensitivity, Quantum limit | ,, | | |
| 27 | **3/5** | 12.09.17 | Eye diagrams | ,, | Assignment –IV | |
| 28 | **4/5** | 13.09.17 | Coherent Detection, | ,, | | |
| 29 | **5/5** | 14.09.17 | Burst mode Receiver operation | ,, | | |
| 30 | **6/5** | 19.09.17 | Analog Receiver. | ,, | | |
| 31 | **1/6** | 15.09.17 | Analog links: Introduction | ,, | | |

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|---|---|---|---|---|---|---|
| 32 | **2/6** | | Overview of Analog links, CNR, | ,, | | |
| 33 | **3/6** | 22.09.17 | Multichannel transmission techniques | Board, chalk, duster | Assignment -V | |
| 34 | **4/6** | 23.09.17 | RF over Fiber, Key link Parameters | ,, | | |
| 35 | **5/6** | 25.09.17 | Radio over fiber links, Microwave photonics. | ,, | | |
| 36 | **6/6** | 26.09.17 | Digital links: Introduction, point to point links | ,, | | |
| 37 | **7/6** | 27.09.17 | system considerations, link power budget, resistive budget, | ,, | | |
| 38 | **8/6** | 28.09.17 | shortwave length band, Transmission distance for single mode fibers, | ,, | | |
| 39 | **9/6** | 03.10.17 | Power penalties, modal noise, chirping. | ,, | | |
| 40 | **1/7** | 04.10.17 | WDM concepts, Overview of WDM operation | ,, | | |
| 41 | **2/7** | 06.10.17 | WDM Principles, WDM standards, | ,, | | |
| 42 | **3/7** | 07.10.17 | Mach- Zehender Interferometer, Multiplexer | ,, | | |
| 43 | **4/7** | 09.10.17 | Isolators and Circulators, Direct thin film filters, | ,, | | |
| 44 | **5/7** | 10.10.17 | Active optical components, MEMs Technology, Variable optical attenuators | ,, | | |
| 45 | **6/7** | 11.10.17 | Tunable optical fibers, Dynamic gain equalizers, | ,, | | |
| 46 | **7/7** | 12.10.17 | Optical drop multiplexers, Polarization controllers, | ,, | | |
| 47 | **8/7** | 13.10.17 | Chromatic dispersion compensators, Tunable light sources. | ,, | | |
| 48 | **1/8** | 14.10.17 | Optical Amplifiers | ,, | | |
| 49 | **2/8** | 16.10.17 | Basic applications and types, | Board, chalk, duster | | |

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| 50 | **3/8** | 2.11.17 | Semiconductor optical amplifiers | ,, | | |
| 51 | **4/8** | 7.11.17 | Erbium Doped Fiber Amplifiers | ,, | | |
| 52 | **5/8** | 9.11.17 | Optical Networks: Introduction | ,, | | |
| 53 | **6/9** | 10.11.17 | SONET/SDH, Optical Interfaces | ,, | | |

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**CMR INSTITUTE OF TECHNOLOGY**

Session wise – Course Plan

## Department of Telecommunication

SEMESTER : B.TECH 8th sem 'A'
BRANCH : TCE
SUBJECT : WIRELESS COMMUNICATION
SUBJECT CODE : 10TE73
NO OF HRS/WK : 5

NAME OF THE FACULTY : Miss Swathi R
DATE OF COMMENCEMENT : 16.08.2017
DATE OF CLOSING : 16.11.2017
CLASS STRENGTH : 45
TOTAL HRS : 50

| Session No | Chapter no (No of hrs planed for the chapter) | DATE | Topics planned for the session | Teaching Aids | Assignments/ Tests planned for the chapter | Topics covered As per plan |
|---|---|---|---|---|---|---|
| 1 | **1/1** | 16.08.17 | Unit-1- **INTRODUCTION TO WIRELESS COMMUNICATION SYSTEMS AND NETWORKS** | Board, chalk, duster | | |
| 2 | **2/1** | 16.08.17 | History and Evolution of wireless networks | | | |
| 3 | **3/1** | 18.08.17 | Development of wireless networks, Overview of OSI layer | ,, | | |
| 4 | **4/1** | 21.08.17 | Different generations of cellular network – 1G AMPS | ,, | | |
| 5 | **5/1** | 21.08.17 | AMPS calls | | | |
| 6 | **6/1** | 23.08.17 | 2G, 3G & 4G Network | ,, | ASSIGN MENT – I | |
| 7 | **1/2** | 23.08.17 | Unit **-2 – Common cellular system components** | | | |
| 8 | **2/2** | 24.08.17 | Common cellular network components | ,, | | |
| 9 | **3/2** | 28.08.17 | Hardware and software views of cellular network | | | |
| 10 | **4/2** | 28.08.17 | 3G Cellular system components | ,, | | |
| 11 | **5/2** | 30.08.17 | Cellular component identification | ,, | | |

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| 12 | **6/2** | 30.08.17 | Call establishment | | ASSIGN MENT – II | |
| 13 | **1/3** | 01.09.17 | Unit –3 **GSM and TDMA techniques** | Board, chalk, duster | | |
| 14 | **2/3** | 05.09.17 | GSM System overview | | | |
| 15 | **3/3** | 05.09.17 | GSM Network | ,, | | |
| 16 | **4/3** | 07.09.17 | GSM System architecture | ,, | | |
| 17 | **5/3** | 07.09.17 | GSM Channel concept | | ASSIGN MENT – III | |
| 18 | **6/3** | 09.09.17 | GSM Identifiers | ,, | | |
| 19 | **1/4** | 12.09.17 | Unit-4 **GSM System operation** | ,, | | |
| 20 | **2/4** | 12.09.17 | Traffic cases | | | |
| 21 | **3/4** | 22.09.17 | Call Handoff | | | |
| 22 | **4/4** | 22.09.17 | Roaming | ,, | ASSIGN MENT – IV | |
| 23 | **5/4** | 25.09.17 | GSM Protocol architecture | | | |
| 24 | **6/4** | 27.09.17 | TDMA systems | | | |
| 25 | **1/5** | 27.09.17 | Unit 5 **CDMA Technology** | | | |
| 26 | **2/5** | 03.10.17 | CDMA Overview | | | |
| 27 | **3/5** | 03.10.17 | CDMA Channel concept | | | |
| 28 | **4/5** | 06.10.17 | CDMA channel concept | ,, | | |
| 29 | **5/5** | 09.10.17 | CDMA overview | | | |
| 30 | **6/5** | 09.10.17 | CDMA Overview | ,, | | |
| 31 | **1/6** | 11.10.17 | Unit 6 **Wireless Modulation Techniques and Hardware** | | | |
| 32 | **2/6** | 11.10.17 | Characteristics of air interface | ,, | | |
| 33 | **3/6** | 13.10.17 | Path loss models | ,, | ASSIGN MENT – V | |
| 34 | **4/6** | 16.10.17 | Wireless coding techniques | | | |
| 35 | **5/6** | 16.10.17 | Digital modulation techniques | | | |
| 36 | **6/6** | 23.10.17 | OFDM,UWB | | | |
| 37 | **7/6** | 23.10.17 | Diversity techniques | Board, chalk, duster | | |

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| 38 | **1/7** | 25.10.17 | Unit-6 **Wireless network architecture and operation** | ,, | | |
| 39 | **2/7** | 27.10.17 | Cellular concept , Cell fundamentals | | | |
| 40 | **3/7** | 27.10.17 | Capacity expansion technique | ,, | | |
| 41 | **4/7** | 30.10.17 | Cellular backbone network | | | |
| 42 | **5/7** | 30.10.17 | Mobility ,Radio & power management | ,, | | |
| 43 | **6/7** | 02.11.17 | Wireless network security | ,, | | |
| 44 | **1/8** | 04.11.17 | UNIT 8 **Introduction to wireless LAN 802.11X** | | | |
| 45 | **2/8** | 04.11.17 | Evolution of wireless LAN | ,, | | |
| 46 | **3/8** | 10.11.17 | Introduction to 802.15x – PAN application and architecture | | | |
| 47 | **4/8** | 10.11.17 | Introduction to broadband MAN – 802.16x technologies | ,, | | |
| 48 | | 14.11.17 | REVISION | ,, | | |
| 49 | | 16.11.17 | REVISION | | | |
| 50 | | 16.11.17 | REVISION | ,, | | |

Signature of faculty Signature of HOD Signature of Principal

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**CMR INSTITUTE OF TECHNOLOGY**

Session wise – Course Plan

## Department of Telecommunication

SEMESTER : VII
BRANCH : TCE
SUBJECT : DSPA
SUBJECT CODE: 10TE74
NO OF HRS/WK: 5

NAME OF THE FACULTY : Mrs.Rashmi K V
DATE OF COMMENCEMENT : 16.08.2017
DATE OF CLOSING : 25.11.2017
CLASS STRENGTH : 46
TOTAL HRS : 49

| Session No | Chapter no (No of hrs planned for the chapter) | DATE | Topics planned for the session | Teaching Aids | Assignments/ Tests planned for the chapter | Topics covered As per plan |
|---|---|---|---|---|---|---|
| 1 | **1/5** | 17.08.2017 | Unit 1:Introduction to DSP: A Digital Signal-Processing System, The Sampling Process, Discrete Time Sequences | Board, chalk, duster | Assignment- I | |
| 2 | **2/5** | 18.08.2017 | Discrete Fourier Transform (DFT) and Fast Fourier Transform (FFT) | ,, | | |
| 3 | **3/5** | 19.08.2017 | Linear Time-Invariant Systems, Digital Filters | ,, | | |
| 4 | **4/5** | 19.08.2017 | Decimation and Interpolation | ,, | | |
| 5 | **5/5** | 21.08.2017 | Problems | ,, | | |
| 6 | **1/10** | 24.08.2017 | Unit 2:Architecture to Programmable DSP processors- Introduction, Basic Architectural Features, DSP Computational Building Blocks-Parallel Multiplier. | ,, | | |
| 7 | **2/10** | 28.08.2017 | DSP Computational Building Blocks-Shifter, MAC unit | Board, chalk, duster | | |

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|---|---|---|---|---|---|---|
| 8 | **3/10** | 29.08.2017 | DSP Computational Building Blocks-ALU | ,, | | |
| 9 | **4/10** | 29.08.2017 | Bus Architecture and Memory | Board, chalk, duster | | |
| 10 | **5/10** | 30.08.2017 | Data Addressing Capabilities, Problems | ,, | | |
| 11 | **6/10** | 04.09.2017 | Data Addressing Capabilities-Specialized Addressing modes | ,, | Assignment -II | |
| 12 | **7/10** | 05.09.2017 | Programmability and Program Execution | ,, | | |
| 13 | **8/10** | 06.09.2017 | Speed Issues-Hardware Architecture, Parallelism, Pipelining | ,, | | |
| 14 | **9/10** | 06.09.2017 | System level parallelism and pipelining | ,, | | |
| 15 | **10/10** | 07.09.2017 | Features for External Interfacing | ,, | | |
| 16 | **1/9** | 11.09.2017 | Unit 3-Programmable DSP processors :Introduction, Commercial Digital Signal-Processing | ,, | | |
| 17 | **2/9** | 12.09.2017 | Data Addressing Modes of TMS320C54xx-Bus structure, CPU | | | |
| 18 | **3/9** | 13.09.2017 | Data Addressing Modes of TMS320C54xx-Immediate, Absolute, Accumulator, Direct Addressing | ,, | | |
| 19 | **4/9** | 13.09.2017 | Data Addressing Modes of TMS320C54xx- Memory-mapped, Stack Addressing | ,, | Assignment –III | |
| 20 | **5/9** | 14.09.2017 | Circular Addressing, Problems for Addressing modes | ,, | | |
| 21 | **6/9** | 23.09.2017 | Stack Addressing, Indirect, Problems for Addressing modes | ,, | | |
| 22 | **7/9** | 25.09.2017 | Problems for Addressing modes | ,, | | |
| 23 | **8/9** | 26.09.2017 | Memory Space of TMS320C54xx Processors | ,, | | |

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|---|---|---|---|---|---|---|
| 24 | **9/9** | 26.09.2017 | Program Control, Problems | ,, | | |
| 25 | **1/4** | 27.09.2017 | Unit 4:Detail Study of TMS320C54X & 54xx Instructions and Programming | ,, | | |
| 26 | **2/4** | 04.10.2017 | On-Chip peripherals, Interrupts of TMS320C54XX | ,, | | |
| 27 | **3/4** | 06.10.2017 | Processors Pipeline Operation of TMS320C54xx Processor | Board, chalk, duster | | |
| 28 | **4/4** | 07.10.2017 | Problems for Pipelining | ,, | Assignment –IV | |
| 29 | **1/5** | 07.10.2017 | Unit 5:Implementation of Basic DSP Algorithms: Introduction, The Q-notation, Problems for Q-notation | ,, | | |
| 30 | **2/5** | 12.10.2017 | FIR Filters, Program for FIR Filter | ,, | | |
| 31 | **3/5** | 13.10.2017 | IIR Filters, Program for IIR Filter | ,, | | |
| 32 | **4/5** | 14.10.2017 | Interpolation filters, Program | ,, | | |
| 33 | **5/5** | 14.10.2017 | Decimation Filters, Examples, Program | ,, | Assignment –V | |
| 34 | **1/3** | 16.10.2017 | Unit 6:Implementation of FFT Algorithms:Introduction, An FFT Algorithm for DFT Computation, | ,, | | |
| 35 | **2/3** | 24.10.2017 | Overflow and Scaling, Bit-Reversed Index Generation | ,, | | |
| 36 | **3/3** | 25.10.2017 | 8-Point FFT Program implementation on the TMS32OC54xx | ,, | | |
| 37 | **1/6** | 26.10.2017 | Unit 7:Interfacing of Memory and I/O peripherals: Introduction, Memory Space Organization | ,, | | |
| 38 | **2/6** | 26.10.2017 | External Bus Interfacing Signals, Memory Interface, | ,, | | |
| 39 | **3/6** | 27.10.2017 | Problems for memory interface | ,, | | |
| 40 | **4/6** | 31.10.2017 | Parallel I/O Interface, Programmed I/O | ,, | | |

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|---|---|---|---|---|---|---|
| 41 | **5/6** | 02.11.2017 | Interrupts and I/O | ,, | | |
| 42 | **6/6** | 03.11.2017 | Direct memory access, Memory design examples | ,, | | |
| 43 | **1/7** | 03.11.2017 | Unit 8:Interfacing and applications of DSP processors-Introduction, Synchronous Serial Interface | ,, | | |
| 44 | **2/7** | 04.11.2017 | , A Multichannel buffered serial port (McBSP) | ,, | | |
| 45 | **3/7** | 13.11.2017 | A CODEC Interface Circuit | ,, | | |
| 46 | **4/7** | 14.11.2017 | CODEC-DSP Interface Example A DSP System | Board, chalk, | | |
| 47 | **5/7** | 15.11.2017 | A DSP System, DSP Based Bio-telemetry Receiver' | ,, | Assignment –VI | |
| 48 | **6/7** | 15.11.2017 | A Speech Processing System | ,, | | |
| 49 | **7/7** | 16.11.2017 | An Image Processing System. | ,, | | |

Signature of faculty Signature of HOD Signature of Principal

| | | |
|---|---|---|
| CMR Institute of Technology, Bangalore | | |
| Department(s): ECE/TCE | | |
| Semester: 07 | Section(s): TCE(7A & B), ECE(7D) | |
| **IMAGE PROCESSING** | 10EC763/10TE754 | Lectures/week: 05 |
| Course Instructor(s): Priya R | | |
| Course duration: 16 Aug 2017 – 16 Nov 2017 | | |

| Session No | Chapter no (No of hrs planed for the chapter) | DATE | Topics planned for the session | Teaching Aids | Assignments/ Tests planned for the chapter | Topics covered As per plan |
|---|---|---|---|---|---|---|
| 1 | **1/1** | 17/08/2017 | **Unit 1:** DIGITAL IMAGE FUNDAMENTALS**:** What is Digital Image Processing? | Board, Chalk, Duster | | |
| 2 | **2/1** | 17/08/2017 | Fundamental Steps in Digital Image Processing, | " | | |
| 3 | **3/1** | 18/08/2017 | Components of an Image processing system, | " | Assignment-1 | |
| 4 | **4/1** | 19/08/2017 | Elements of Visual Perception. | " | | |
| 5 | **5/1** | 21/08/2017 | Applications | " | | |
| 6 | **1/2** | 22/8/2017 | **Unit 2:**Image Sensing and Acquisition | " | | |
| 7 | **2/2** | 24/8/2017 | Image Sampling and Quantization | " | | |
| 8 | **3/2** | 24/8/2017 | Some Basic Relationships between Pixels | " | Assignment-2 | |
| 9 | **4/2** | 28/08/2017 | Linear and Nonlinear Operations | " | | |
| 10 | **5/2** | 29/8/2017 | Problems | " | | |
| 11 | **1/3** | 31/8/2017 | **Unit 3 :**IMAGE TRANSFORMS: Two-dimensional orthogonal & unitary transforms, properties of unitary transforms, | ,, | | |
| 12 | **2/3** | 1/9/2017 | | Board, Chalk, Duster | | |

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|---|---|---|---|---|---|---|
| 13 | **3/3** | 3/9/2017 | | " | | |
| 14 | **4/3** | 3/9/2017 | Two dimensional discrete Fourier transform. | " | Assignment-3 | |
| 15 | **5/3** | 4/9/2017 | | " | | |
| 16 | **6/3** | 5/9/2017 | | ,, | | |
| 17 | **7/3** | 6/9/2017 | Question paper problems | | | |
| | **1/4** | 8/9/2017 | **Unit 4:** Discrete cosine transform, sine transform | | | |
| | **2/4** | 11/9/2017 | | | | |
| | **3/4** | 11/9/2017 | Hadamard transform | | | |
| | **4/4** | 12/9/2017 | Haar transform | | Assignment-4 | |
| | **5/4** | 13/9/2017 | Slant transform | | | |
| | **6/4** | 15/9/2017 | KL transform. | | | |
| | **7/4** | 23/9/2017 | Problems | | | |
| 18 | **1/5** | 23/9/2017 | **Unit 5: IMAGE ENHANCEMENT:** Image Enhancement in Spatial domain, Some Basic Gray Level Trans - formations,. | " | | |
| 19 | **2/5** | 25/9/2017 | | " | Assignment-5 | |
| 20 | **3/5** | 26/9/2017 | | " | | |
| 21 | **4/5** | 28/9/2017 | Histogram Processing, Enhancement Using Arithmetic/Logic Operations | " | | |
| 22 | **5/5** | 4/10/2017 | | " | | |
| 23 | **6/5** | 4/10/2017 | | " | | |
| 24 | **7/5** | 6/10/2017 | | " | | |
| 25 | **1/6** | 7/10/2017 | **Unit 6:**Basics of Spatial Filtering | " | | |
| 26 | **2/6** | 10/10/2017 | | " | | |
| 27 | **3/6** | 12/10/2017 | Image enhancement in the Frequency Domain filters | " | | |
| 28 | **4/6** | 13/10/2017 | | " | | |
| 29 | **5/6** | 13/10/2017 | Smoothing Frequency Domain filters | " | | |

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| 30 | **6/6** | 14/10/2017 | Sharpening Frequency Domain filters | " | Assignment-6 | |
| 31 | **7/6** | 17/10/2017 | homomorphic filtering, problems | " | | |
| 32 | **1/8** | 24/10/2017 | Unit 8:Color Fundamentals., | " | | |
| 33 | **2/8** | 24/10/2017 | Color Models | " | | |
| 34 | **3/8** | 25/10/2017 | ., Pseudo color Image Processing | " | | |
| 35 | **4/8** | 26/10/2017 | processing basics of full color image processing | " | Assignment-7 | |
| 36 | **5/8** | 28/10/2017 | | " | | |
| 37 | **6/8** | 31/10/2017 | | " | | |
| 38 | **7/8** | 31/10/2017 | Problems & Question paper revision | " | | |
| 39 | **1/7** | 2/11/2017 | **Unit 7:**Model of image degradation/restoration process | " | | |
| 40 | **2/7** | 3/11/2017 | | " | | |
| 41 | **3/7** | 9/11/2017 | noise models | " | | |
| 42 | **4/7** | 11/11/2017 | Restoration in the Presence of Noise | Board, Chalk, Duster | Assignment-8 | |
| 43 | **5/7** | 11/11/2017 | Only-Spatial Filtering, Periodic Noise Reduction by Frequency Domain Filtering | " | | |
| 44 | **6/7** | 13/11/2017 | | " | | |
| 45 | **7/7** | 14/11/2017 | Linear Position-Invariant Degradations, inverse filtering | " | | |
| 46 | **8/7** | 15/11/2017 | | " | | |
| 47 | **9/7** | 16/11/2017 | minimum mean square error (Weiner) Filtering | " | | |

Signature of faculty Signature of HOD Signature of Principal

*#132, AECS Layout, IT Park Road, Kundalahalli, Bangalore – 560 037*
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**CMR INSTITUTE OF TECHNOLOGY**

# Session wise – Course Plan

## Department of Telecommunication

Semester : VII
Branch : TCE/ECE
Subject : Embedded System Design
Subject Code : 10EC765 / 10EC74
No Of Hrs/ Wk: 5

Name Of The Faculty : Bhumika Narang
Date Of Commencement : 6.08.2017
Date Of Closing : 5.11.2017
Class Strength : 131
Total Hrs : 60

| Session No | Chapter no (No of hrs planed for the chapter) | Date | Topics planned for the session | Teaching Aids | Assignments/ Tests planned for the chapter | Topics covered as per plan |
|---|---|---|---|---|---|---|
| 1 | **1/1** | 16-08-17 | **Unit1: Introduction to Embedded System**- Introducing Embedded Systems, Philosophy | Board & chalk | | |
| 2 | **2/1** | 18-08-17 | Embedded Systems, Embedded System Design | ,, | Assignment- I | |
| 3 | **3/1** | 19-08-17 | Development Process | ,, | | |
| 4 | **4/1** | 21-08-17 | Embedded design life cycle | ,, | | |
| 5 | **1/2** | 23-08-17 | **Unit 2: The Hardware Side**: An Introduction, The Core Level | ,, | | |
| 6 | **2/2** | 23-08-17 | Representing Information, Understanding Numbers | ,, | | |
| 7 | **3/2** | 28-08-17 | Addresses, Instructions | ,, | | |
| 8 | **4/2** | 29-08-17 | Registers-A First Look, Embedded Systems-A Register View, Register View of a Microprocessor | ,, | | |
| 9 | **5/2** | 30-08-17 | Embedded Systems-An Instruction Set View | ,, | Assignment - II | |
| 10 | **6/2** | 01-09-17 | The Hardware Side: Storage Elements | ,, | | |
| 11 | **7/2** | 01-09-17 | Finite-State Machines The concepts of State and Time, The State | ,, | | |

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|---|---|---|---|---|---|---|
| | | | Diagram | | | |
| 12 | **8/2** | 05-09-17 | Finite State Machines- A Theoretical Model. | ,, | | |
| 13 | **1/3** | 06-09-17 | **Unit 3: Memories and the Memory Subsystem**: Classifying Memory, A General Memory Interface, ROM Overview | LCD Projector | | |
| 14 | **2/3** | 07-09-17 | Static RAM Overview | ,, | | |
| 15 | **3/3** | 09-09-17 | Dynamic RAM Overview | ,, | | |
| 16 | **4/3** | 09-09-17 | Chip Organization, Terminology | ,, | | |
| 17 | **5/3** | 12-09-17 | A Memory Interface in Detail, SRAM Design | ,, | Assignment – III | |
| 18 | **6/3** | 13-09-17 | DRAM Design | ,, | | |
| 19 | **7/3** | 14-09-17 | DRAM Memory Interface | ,, | | |
| 20 | **8/3** | 22-09-17 | The Memory Map, Memory Subsystem Architecture | ,, | | |
| 21 | **9/3** | 22-09-17 | Basic Concepts of Caching, Designing a Cache System | ,, | | |
| 22 | **10/3** | 25-09-17 | Dynamic Memory Allocation. | ,, | | |
| 23 | **1/4** | 26-09-17 | **Unit 4: Embedded Systems Design and Development** : System Design and Development, Life-cycle Models | Board & chalk | | |
| 24 | **2/4** | 27-09-17 | Life-cycle Models | ,, | | |
| 25 | **3/4** | 03-10-17 | Problem Solving-Five Steps to Design, The Design Process | ,, | | |
| 26 | **4/4** | 03-10-17 | Identifying the Requirements, Formulating the Requirements Specification | ,, | | |
| 27 | **5/4** | 04-10-17 | The System Design Specification | ,, | Assignmnt – IV | |
| 28 | **6/4** | 06-10-17 | System Specifications versus System Requirements, Partitioning and Decomposing a System | ,, | | |
| 29 | **7/4** | 07-10-17 | Functional Design | ,, | | |
| 30 | **8/4** | 09-10-17 | Architectural Design | ,, | | |
| 31 | **9/4** | 10-10-17 | Functional Model versus Architectural Model, Prototyping | LCD Projector | | |
| 32 | **10/4** | 11-10-17 | Other Considerations, Archiving the Project. | ,, | | |

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|---|---|---|---|---|---|---|
| 33 | **1/5&6** | 11-10-17 | **Unit 5 & 6: Real-Time Kernels and Operating Systems**: Tasks and Things, Programs and Processes | LCD Projector | | |
| 34 | **2/5&6** | 12-10-17 | The CPU is a resource | ,, | | |
| 35 | **3/5&6** | 13-10-17 | Threads – Lightweight and heavyweight | ,, | Assignment - V | |
| 36 | **4/5&6** | 14-10-17 | Sharing Resources, Foreground/ Background Systems | ,, | | |
| 37 | **5/5&6** | 16-10-17 | The operating System, The real time operating system (RTOS) | ,, | | |
| 38 | **6/5&6** | 23-10-17 | OS architecture | ,, | | |
| 39 | **7/5&6** | 23-10-17 | Tasks and Task control blocks | ,, | Assignment - VI | |
| 40 | **8/5&6** | 24-10-17 | Tasks and Task control blocks | ,, | | |
| 41 | **9/5&6** | 25-10-17 | Memory management revisited | ,, | | |
| 42 | **10/5&6** | 26-10-17 | Memory management revisited | ,, | | |
| 43 | **1/7&8** | 27-10-17 | **Unit 7 & 8: Performance Analysis and Optimization**: Performance or Efficiency Measures, Complexity Analysis | ,, | | |
| 44 | **2/7&8** | 28-10-17 | The methodology | ,, | | |
| 45 | **3/7&8** | 30-10-17 | Analyzing code | ,, | Assignment - VII | |
| 46 | **4/7&8** | 30-10-17 | Instructions in Detail | ,, | | |
| 47 | **5/7&8** | 02-11-17 | Time, etc. – A more detailed look, Response Time | ,, | | |
| 48 | **6/7&8** | 03-11-17 | Time Loading | ,, | | |
| 49 | **7/7&8** | 04-11-17 | Memory Loading | ,, | | |
| 50 | **8/7&8** | 10-11-17 | Evaluating Performance, Thoughts on Performance Optimization | Board & chalk | Assignment - VIII | |
| 51 | **9/7&8** | 10-11-17 | Performance optimization, Tricks of the Trade | ,, | | |
| 52 | **10/7&8** | 14-11-17 | Hardware Accelerators | ,, | | |
| 53 | **11/7&8** | 15-11-17 | Caches and Performance. | ,, | | |
| 54 | **12/7&8** | 16-11-17 | Revision | ,, | | |

Signature of faculty Signature of HOD Signature of Principal

**Literature:**

| Book Type | Code | Author & Title | Publication info | |
|---|---|---|---|---|
| | | | **Edition & Publisher** | **ISBN #** |
| Text Book1 | TB1 | **Embedded Systems – A contemporary Design Tool,** James K. Peckol | John Weily India Pvt. Ltd, 2008 | 978-81-265-2456-3 |
| Reference Book1 | RB1 | **Embedded Systems: Architecture and Programming,** Raj Kamal | TMH. 2008 | 978-0-07-066764-8 |
| Reference Book2 | RB2 | **Embedded Systems Architecture – A Comprehensive Guide for Engineers and Programmers**, Tammy Noergaard | Elsevier Publication, 2005 | -- |
| Reference Book3 | RB3 | **Programming for Embedded Systems**, Dreamtech Software Team | John Wiley India Pvt. Ltd, 2008 | -- |