# TCET

## DEPARTMENT OF INFORMATION TECHNOLOGY (IT)

Credit Based Grading Scheme(Revised - 2012) - University of Mumbai

**CBGS-2012(R)**

**TCET/FRM/IP-02/09** | **Semester Plan (Theory)** | **Revision: A**

**Semester: III** | **Course: IT**

**Subject: ITC-305 Principles of Communications** | **Class: SE IT -A**

| S.No. | Prerequisite/ Bridge course: | Duration (Week /Hrs) | Modes of Learning | Recommended Sources |
|---|---|---|---|---|
| 1 | Analog And Digital Circuits | 6 hours | Self Learning/ Revision | **Textbooks:**<br>1. Robert L. Boylestad, Louis Nashelsky, "Electronic devices and circuit Theory", PHI<br>2. R. P. Jain, "Modern Digital Electronics", Tata McGraw Hill. |

## Class Room Teaching

| Sr. No. | Module No. | Lesson No. | Topics Planned (Technology to be used) | Teaching Aids Required | Planned /Completion Date | | Resource Book Reference | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1 | --- | L1.1 | Student Orientation Program -2017<br>Theory | Power point presentation, Chalk & Board | 10/07/2017 | 10/07/2017 | | |
| 2 | ---- | L1.2 | Student Orientation Program -2017<br>-Tutorial | Power point presentation, Chalk & Board | 11/07/2017 | 11/07/2017 | | |
| 3 | ---- | L1.3 | Student Orientation Program -2017-OBE | Power point presentation, Chalk & Board | 12/07/2017 | 12/07/2017 | | |
| 4 | Module 1 | L1.4 | Basics of analog communication systems , Sources of information, Baseband and bandpass signals | Power point presentation, Chalk & Board | 13/07/2017 | 13/07/2017 | 1.7.1 &1.7.2 | |
| 5 | Module 1 | L1.5 | Types of communication channels, Frequency / Spectrum allocations, Need for modulation and demodulation | Power point presentation, Chalk & Board | 14/07/2017 | 14/07/2017 | 1.7.3 &1.7.4 | |
| 6 | Module 3 | L2.1 | Analog Modulation and Demodulation (PART A) Amplitude modulation techniques and its types- DSBFC-AM | Power point presentation, Chalk & Board | 17/07/2017 | | 3.7.1 | |
| 7 | Module 3 | L2.2 | DSBSC-AM, SSB SC AM | Power point presentation, Chalk & Board | 18/07/2017 | | 3.7.2 | |

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|---|---|---|---|---|---|---|---|---|
| 8 | Module 3 | L2.2 | SSB SC AM | Power point presentation, Chalk & Board | 19/07/2017 | | 3.7.3 | |
| 9 | Module 3 | L2.3 | Block diagram of TRFreceivers and Super heterodyne receiver. | Power point presentation, Chalk & Board | 20//072017 | | 3.7.4 | |
| 10 | Module 3 | L2.4 | Receiver characteristics - Sensitivity, Selectivity, Fidelity, Image frequency and its rejectionand double spotting | Power point presentation, Chalk & Board | 21/07/2017 | | 3.7.5 | |
| 11 | Module 3 | L3.1 | Analog Modulation and Demodulation (PART B) FM transmission and reception: Principle of FM | Power point presentation, Chalk & Board | 24/07/2017 | | 3.7.6 | |
| 12 | Module 3 | L3.2 | Pre- emphasis and de-emphasis in FM, FM noise triangle, | Power point presentation, Chalk & Board | 26/07/2017 | | 3.7.7 | |
| 13 | Module 3 | L3.3 | Comparison of AM andFM systems, FM generation – Varactor diode modulator, | Power point presentation, Chalk & Board | 28/07/2017 | | 3.7.8 | |
| 14 | Module 3 | L4.1 | Indirect method (Armstrong method)FM demodulator | Power point presentation, Chalk & Board | 31/07/2017 | | 3.7.9 | |
| 15 | Module 3 | L4.2 | Foster Seely discriminator, Ratio detector | Power point presentation, Chalk & Board | 08/02/2017 | | 3.7.10 | |
| 16 | Module 2 | L4.3 | Fourier Transform and Noise Introduction to Fourier Transform, its properties | Power point presentation, Chalk & Board | 4/8/2017 | | 2.7.1 | |
| 17 | Module 2 | L5.1 | FT of unit step, delta and gate function. | Power point presentation, Chalk & Board | 7/8/2017 | | 2.7.2 | |
| 18 | Module 2 | L5.2 | Correlated and uncorrelated sources of noise in communication system, | Power point presentation, Chalk & Board | 08/09/2017 | | 2.7.3 | |

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|---|---|---|---|---|---|---|---|---|
| 19 | Module 2 | L5.3 | Signal to noise ratio, Noise factor, Noise figure, Friis formula Equivalent noise temp. | Power point presentation, Chalk & Board | 08/11/2017 | | 2.7.4 | |
| 20 | Module 4 | L6.1 | Pulse Analog Modulation Sampling theorem for low pass and bandpass signals with proof | Power point presentation, Chalk & Board | 14/8/17 | | 4.7.1 | |
| 21 | Module 4 | L6.2 | Anti aliasing filter, PAM | Power point presentation, Chalk & Board | 16/8/17 | | 4.7.2 | |
| 22 | Module 4 | L6.3 | PWM generation and'degeneration | Power point presentation, Chalk & Board | 18/8/17 | | 4.7.3 | |
| 23 | Module 4 | L6.4 | PPM generation and'degeneration | Power point presentation, Chalk & Board | 19/8/17 | | 4.7.4 | |
| 24 | Module 4 | L8.1 | Digital Modulation Techniques Introduction to digital communication Quantization process | Power point presentation, Chalk & Board | 30/8/17 | | 5.7.1 | |
| 25 | Module 5 | L8.2 | Pulse code modulation, | Power point presentation, Chalk & Board | 1/9/2017 | | 5.7.2 | |
| 26 | Module 5 | L9.1 | Delta modulation,Adaptive delta modulation | Power point presentation, Chalk & Board | 4/9/2017 | | 5.7.3 | |
| 27 | Module 5 | L9.2 | Principle of time division multiplexing ,Frequency division multiplexing and its applications | Power point presentation, Chalk & Board | 6/9/2017 | | 5.7.4 | |
| 28 | Module 5 | L9.3 | Bandpass Modulation Introduction to Line codes Intersymbol interference | Power point presentation, Chalk & Board | 8/9/2017 | | 5.7.5 | |

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|---|---|---|---|---|---|---|---|---|
| 29 | Module 5 | L10.1 | Binary phase shift keying | Power point presentation, Chalk & Board | 11/9/2017 | | 5.7.6 | |
| 30 | Module 5 | L10.2 | Differentally encoded phase shift keying | Power point presentation, Chalk & Board | 13/9/17 | | 5.7.7 | |
| 31 | Module 5 | L10.3 | Quadrature phase shift keying | Power point presentation, Chalk & Board | 15/9/17 | | 5.7.8 | |
| 32 | Module 5 | L11.1 | M-ary phase shift keying | Power point presentation, Chalk & Board | 18/9/17 | | 5.7.9 | |
| 33 | Module 5 | L11.2 | Quadrature amplitude shift keying | Power point presentation, Chalk & Board | 20/9/17 | | 5.7.10 | |
| 34 | Module 5 | L11.3 | Binary frequency shift keying, M-ary frequency shift keying | Power point presentation, Chalk & Board | 22/9/17 | | 5.7.11 | |
| 35 | Module 5 | L12.1 | Minimum shift keying | Power point presentation, Chalk & Board | 25/9/17 | | 5.7.12 | |
| 36 | Module 6 | L13.1 | Electromagnetic radiation, Fundamentals, | Power point presentation, Chalk & Board | 4/10/2017 | | 6.7.1 | |
| 37 | Module 6 | L13.2 | Types of propagation, | Power point presentation, Chalk & Board | 6/10/2017 | | 6.7.2 | |
| 38 | Module 6 | L13.3 | Ground wave propagation , | Power point presentation, Chalk & Board | 7/10/2017 | | 6.7.3 | |
| 39 | Module 6 | L14.1 | Sky wave propagation , | Power point presentation, Chalk & Board | 13/10/17 | | 6.7.4 | |
| 40 | ---- | L15.1 | Revison / Practice Session | Power point presentation, Chalk & Board | 16/10/17 | | ---- | |

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|---|---|---|---|---|---|---|---|---|
| 41 | ---- | L15.2 | Revison / Practice Session | Power point presentation, Chalk & Board | 18/10/17 | | ---- | |
| Remark: | | Syllabus Coverage: | | Practice Session: 2 | | | **Content Beyond Syllabus:** Case Study on OFDM | |
| Course: | | | | | | | | |
| No. of (lectures planned)/(lecture taken): 41 | | | | | | | | |
| **Advanced course: Digital Communication** | | 20 Hours | | Online NPTEL videos | **Web sources:** 1.http://nptel.ac.in/courses/117101051 2. www.tutorialpoint.com **Textbook reference:** 1. Digital communications: by Hayking ; Tata McGraw Hill Education private Ltd. | | | |

## Text Books:


1. Simon Haykin, Michael Moher, Introduction to Analog & Digital Communications, Wiley India Pvt. Ltd., 2nd Ed.

2. Herbert Taub, Donald L Schilling, Goutam Saha, Principles of Communication Systems, Tata McGraw Hill, 3rdEd.

3. V Chandrasekar, Communication Systems, Oxford University Press, Ist Ed.


## References:


1. George Kennedy, Bernard Davis, SRM Prasanna, Electronic Communication Systems, Tata McGraw Hill, 5th Ed.

2. Wayne Tomasi, Electronic Communications Systems, Pearson Publication, 5th Ed.

3. BP Lathi,Zhi Ding, Modern Digital and Analog Communication Systems, Oxford University.

4. K Sam Shanmugam, Digital and Analog Communication Systems, Wiley India Pvt. Ltd, 1st Ed.


| Name & Signature of Faculty | Signature of HOD | Signature of Principal /Dean (Academics) |
|---|---|---|
| Mr.Yele Vijaykumar | | |
| Date: | Date: | Date: |

## Note:

1. Plan date and completion date should be in compliance
2. Courses are required to be taught with emphasis on resource book, course file, text books, reference books, digital references etc
3. Planning is to be done for 15 weeks where 1st week will be AOP, 2nd -13th for effective teaching and
4. According to university syllabus where lecture of 4 hrs/per week is mentioned minimum 55 hrs
5. and in case of 3 lectures per week minimum 45 lectures are to be arranged are required to be
6. In order to improve score in NBA, faculty members are also required to focus course teaching beyond university prescribed syllabus and measuring the outcomes w.r.t learning courses and
7. Text books and reference books are available in syllabus. Here only additional references w.r.t. non-digital/ digital sources can be written (if applicable)
8. Technology to be used in class room during lecture shall be written below the topic planned within the bracket