

<b>CLASS: B. Sc (Information technology)</b>		<b>Semester – I</b>
<b>SUBJECT: Electronics and Communication Technology (USIT104)</b>		
<b>Periods per week</b>	<b>Lectures - 5</b>	<b>3 Credits</b>

Unit – I	Concept of Conductor, Semiconductor, Insulator. Semiconductor Diode, Forward bias, Reverse Bias, Application of Diode as Rectifier, Zener diode and its applications, Introduction to Transistor (BJT, FET), PNP, NPN Transistors their Characteristic. Application of Transistor as amplifier and as a Switch.	<b>8 Lect.</b>
Unit- II	Concept of amplification, amplifier notations, $A_v$ , $A_i$ , $A_p$ , $Z_i$ , $Z_o$ ), Application of BJT as single stage Amplifier, Frequency response of single stage Amplifier. Multistage Amplifiers:- (Basics concepts) RC coupled, cascade, Darlington pair, DC amplifiers.	<b>8 Lect.</b>
Unit-III	Concept of Feedback:- Negative Feedback and its advantage in Amplification, Positive Feedback :- Oscillators, RC Phase Shift Oscillator, LC Oscillator. Switching Circuits Multivibrators : - Monostable using IC 555 and Astable using IC 555 (including problems)	<b>8 Lect.</b>
Unit- IV	Introduction:- Need for modulation system, Concept of Modulation. AM :- Definition of AM, Modulation index, Power relation in AM, Generation and Demodulation of AM. SSB:- Power requirement in comparison with AM, Advantages of SSB over AM, Concept of Balanced Modulator, Generation of SSB, Pilot Carrier System, Independent Side System, Vestigial Sideband Transmission.	<b>8 Lect.</b>
Unit- V	FM: - Definition of FM, Bandwidth, Noise triangle, Pre-emphasis and De-emphasis. PM: - Definition of PM. Difference between AM and FM. Radio receivers. Pulse Modulation:- Sampling Theorem, PAM, PTM, PWM, PPM, pulse code modulation, Quantization noise, companding, PCM system, differential PCM, Delta modulation. Multiplexing: - FDM/TDM. Television:- Scanning, Composite Video signal, Television Transmitter, television receiver.	<b>8 Lect.</b>
Unit-VI	Introduction to Digital Communication: PSK, ASK, FSK. Introduction to fibre optics system:- Propagation of light in optical fibre; ray model . Types of fibre : Single mode, step index. Graded index. Signal distortion: attenuation, dispersion. Optical sources: LED, LASERS. Optical Detectors and optics links. Link Budget.	<b>8 Lect.</b>

### References

- Allen Mottershead, "Electronic Devices and Circuits", PHI  
Boylstead and Neshelesky , "Electronics Devices and Circuits", 4<sup>th</sup> , PHI, 1999.  
Simon Haykin, "An Introduction to Analog and Digital communications", John Wiley and Sons, 1994.  
R.B Carlson, "Communication Systems", MacGraw Hill.  
George Kennedy, "Electrical Communication systems", Tata McGraw Hill 1993.  
Roody Collin, "Electronics Communication", PHI  
J. Millman and A Grabel, "Microelectronics" MacGraw Hill 1988.  
Proakis J. J, "Digital Communications" Mc Graw Hill.  
Digital Communications by TAUB Schilling

**Term Work for USIT104**

- i) Assignments: Should contain at least 2 assignments covering the Syllabus.
- ii) Class Tests: One. Also Known as Unit Test or In-Semester Examinations
- iii) Tutorial : Minimum Three tutorials covering the syllabus

**Practical (USIT1P4):**

<b>Journal Practical</b>	<b>3 Lectures per Week (1 Credit)</b>
<p>List of Practical</p> <ol style="list-style-type: none"><li>1. Study of Zener diode characteristics</li><li>2. Study of Half wave and full wave rectifiers</li><li>3. Study of bridge rectifier.</li><li>4. Study of Transistor as a switch</li><li>5. Monostable multivibrator using IC 555 timer.</li><li>6. Astable multivibrator using IC 555 timer.</li><li>7. Study of Wien bridge oscillator</li><li>8. Frequency Response of single stage transistor amplifier</li><li>9. Study of Amplitude Modulation</li><li>10. Study of Frequency Modulation</li><li>11. Study of Fibre Optic transmission</li><li>12. Study of Pulse Amplitude Modulation</li><li>13. Study of transistor DC Amplifier</li></ol>	