

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Scheme of Teaching and Examination

B.E. VIII Semester Electronics & Telecommunication Engineering

Sl. No.	Board of Studies (BOS)	Courses (Subject)	Course Code	Period per Week			Scheme of Examination			Total Marks	Credit
				L	T	P	Theory / Lab				
							ESE	CT	TA		
1.	Electronics & Telecom.	Advanced Communication		3	1	-	100	20	30	150	4
2.	Electronics & Telecom.	Professional Elective -IV		2	1	-	100	20	30	150	3
3.	Electronics & Telecom.	Open Elective - III		2		-	100	20	30	150	2
4.	Electronics & Telecom.	Advanced Communication Lab		-	-	2	40	-	20	60	1
5.	Electronics & Telecom.	Power Electronics Lab		-	-	2	40	-	20	60	1
6.	Electronics & Telecom.	Project (Phase II)		-	-	14	350	-	80	430	7
Total Marks				7	2	18	730	60	210	1000	18

Professional Elective - IV

Sl. No.	Board of Studies (BOS)	Courses (Subject)	Course Code	Credit
1	ETC	VLSI and Microelectronics		3
2	ETC	Radar and Navigational Aids		3
3	ETC	Consumer Electronics		3
4	ETC	Smart Antennas		3
5	ETC	Bio-medical Signal Processing		3

Open Elective - III

Sl. No.	Board of Studies (BOS)	Courses (Subject)	Course Code	Credit
1	ETC	Operation research		2
2	ETC	Android Apps Development		2
3	ETC	Management Concepts & Techniques		2
4	ETC	E-Commerce & strategic IT		2
5	ETC	Digital Switching & Multiplexing		2
6	ETC	Optimization Techniques		2

Note:-

- 1/4th of total strength of students to minimum of twenty students is required to offer an elective in the college in a particular academic session



2. Choice of elective course once made for an examination cannot be changed in future examinations.

3. In professional elective category students are allowed to opt MOOCs courses having similar credits assigned to elective courses.

4. The particular MOOC course(s) opted by the student from the list for Credit Transfer should be recommended by the Principal/Director of the institution to the University.



Chhattisgarh Swami Vivekananda Technical University, Bhilai

Name of program: Bachelor of Technology

Branch: Electronics & Telecommunication

Semester: VIII

Subject: Advanced Communication

Total Theory Periods: 40
(Minimum)

Total Tutorial Periods: 10
(Minimum)

ESE duration: Three Hours
35

Code: _____

Class Tests: Two

Assignments: Two

Maximum Marks: 100 Minimum Marks:

Course Objectives:

1. To become familiar with fundamentals of satellite communication
2. To learn about the satellite link design
3. To gain knowledge about the different access techniques used in satellite communication.
4. To understand the concepts of Optical communication.
5. To learn about optical transmitters and receivers.

UNIT I : Introduction to Satellite: Satellite Communication systems, introduction, Kepler's laws, orbits, orbital effects, orbital perturbations, Earth, Look Angles, Earth Coverage and Slant Range, Satellite sub systems, Antennas, Transponders, earth station technology, Satellite systems- GEO systems, non-GEO communication systems, Satellite Applications- Global Positioning System, Very Small Aperture Terminal system, Direct to Home Satellite Systems.

UNIT-II: Communication Satellite Link Design: Link Design Equation, System Noise Temperature, C/N, G/T Ratio, Atmosphere and Ionosphere Effects on Link Design, Uplink Design, Complete Link Design, Interference effects on complete Link Design, Earth Station Parameters, Satellite Communication Links: Analog Baseband Signal, FDM Techniques, SNR and CNR in FM in Satellite link.

UNIT-III: Multiple Access Techniques: TDMA-Frame and Burst Structure, Frame Efficiency, Super frame, TDMA Frame Acquisition and Synchronization, TDMA burst TME Plan, Multiple Beam TDMA. Introduction: Principle of OFDM, implementation of transceivers, frequency selective Channels, Peak to average power ratio, inter-carrier interference, adaptive modulation and capacity, multiple access, multi- carrier code division multiple access.(Must be covered in abstract form only)

UNIT-IV: Optical Fiber Fundamentals: Numerical Aperture, Optical Fiber Modes and Propagation, Single Mode and Multi-Mode Fibers, Step Index and Graded Index Fibers



Structures, Different types of Attenuations in Optical Fiber Communication.

UNIT-V: Light Sources, Detectors & Optical Networks: Light Emitting Diodes, LASER Principles, Laser Diode, Operating Characteristics and Modulation Circuits of LED and LASER Diodes Principle of Photo-Detection, Semiconductor Photodiode, PIN Photodiode, Avalanche Photodiode, Optical Networks: SONET/SDH Networks.

Name of Textbooks:

1. Fundamentals of Satellite Communication by Raja Rao, Pearson.
2. Satellite Communication by Monojit,Mitra, PHI.
3. Optical Fiber Communication by Keiser, TMH.
4. Fiber Optic Communications by Palais, 4th Edition, Pearson Education.
5. Theory and Applications of OFDM and CDMA: Wideband Wireless Communications by- Henrik_Schulze & Christian_Lueders

Name of Reference Books:

1. Satellite Communications by Dr. D.C. Agarwal, Khanna Publisher.
2. Satellite Communication System Engineering by Pritchard, Pearson Education.
3. Satellite Communication, Timothy Pratt, John Wiley & sons
4. Opto Electronics and Fiber Optic Communication by Sarkar & Sarkar, New Age International Publishers
5. Fundamentals of Optical Fiber Communication by Satish Kumar, PHI
6. Optical Fiber Communication-Principles and Practice by John Senior, PHI
7. Multi-Carrier Digital Communications: Theory and Applications of OFDM By- Burton_R. Saltzberg & Mustafa_Ergen_

Course Outcomes:

1. Understand the basic concepts of Satellite.
2. Able to calculate the complete C/N ratio of satellite link design.
3. Able to understand multiple access techniques related to satellite.
4. Able to understand the concepts of optical fiber communication.



5. Student gains knowledge how optical signal is transmitted and received
6. Student gets an insight into SONET/SDH networks.

Chhattisgarh Swami Vivekananda Technical University, Bhilai

Name of program: Bachelor of Technology

Branch: Electronics & Telecommunication

Semester: VIII

Subject: Advanced Communication Lab

Code:_____

Total Lab Periods: 36

Batch Size: 30

Maximum Marks: 40

Minimum Marks: 20



List of Experiments: (At least Ten experiments are to be performed by each student)

1. . To measure bending loss of a fiber.
2. To measure propagation or attenuation loss in a fiber.
3. To obtain amplitude modulation and to transmit the same over fiber optic cable and to demodulate the same at the
4. receiver end.
5. To determine the numerical aperture of a fiber.
6. To measure various types of losses occur in an optical fiber.
7. To study the AC characteristics of intensity modulation of laser and fiber optic system.
8. To measure optical power of a laser diode vs forward current.
9. To monitor photo diode current vs laser optical output.
10. Demonstration of voice transmission through optical fiber using FM.
11. Communication between two computers using RS232 interface via optical fiber.
12. To measure plastic fiber patch cord loss for various lengths of fiber.
13. To study voice transmission through fiber optic cable using PWM.
14. To transmit and receive text files over fiber optic cable.
15. To transmit, receive and observe digital signals over fiber optic cable.
16. To measure rise time, fall time, pulse width distortion of a laser and to determine transmission delay.

List of Equipments/Machine Required:

Fiber optic trainer kit, Optical fiber, Splicing unit, Data Acquisition card for optical signal, O/E & E/O Converter, CRO.

Recommended Books:

1. Fundamentals of Optical Fiber Communication – Sathish Kumar, PHI

Chhattisgarh Swami Vivekananda Technical University, Bhilai

Name of program: Bachelor of Technology

Branch: Electronics & Telecommunication

Semester: VIII

Subject: Power Electronics Lab

Code:_____

Total Lab Periods: 36

Batch Size: 30

Maximum Marks: 40

Minimum Marks: 20



List of Experiments: (At least Ten experiments are to be performed by each student)

1. Study of VI characteristic of a silicon controlled Rectifier (SCR).
2. Study of VI characteristic of a DIAC.
3. Study of VI characteristic of a TRIAC.
4. Study of VI characteristic of a UJT.
5. Application of UJT as relaxation Oscillator.
6. Study of Half wave gate controlled rectifier-using SCR.
7. RC triggering Scheme of SCR.
8. Study of Voltage Commutation.
9. Study of Current Commutation.
10. Study of single-phase, Half –controlled, full-wave rectifier using two SCRs, and two diodes.
11. Speed controls of a dc shunt Motor using SCR.
12. Study of a three –phase rectifier using power diodes.
13. Study of a three phase full-wave half –controlled rectifier.
14. To study a TRIAC power control circuit
 - (i) use to control the speed of a fan
 - (ii) used as a dimmer.
15. To observe how a Photoconductive cell may be used to trigger an SCR.

Apparatus required:

- | | | | |
|----------------|-----------------|-----------------------|-------------------|
| 1. Diodes | 2. SPST switch. | 3. Transformer | 4. Oscilloscope |
| 5. Photo cells | 6. CRO | 7. Voltmeter, Ammeter | 8. DC shunt motor |

Reference books:-

1. Fundamentals of Power Electronics ISTE S .K Bhattacharya.
2. Fundamentals of Power Electronics by S. Rama Reddy.



Chhattisgarh Swami Vivekananda Technical University, Bilai

Name of program: Bachelor of Technology

Branch: Electronics & Telecommunication

Semester: VIII

Subject: Consumer Electronics

**Total Theory Periods: 40
(Minimum)**

**Total Tutorial Periods: 10
(Minimum)**

ESE duration: Three Hours

35

Code: _____

Class Tests: Two

Assignments: Two

Maximum Marks: 100 Minimum Marks:



Course Objectives:

1. To understand fundamentals of television.
2. To gain knowledge of color TV fundamentals.
3. To understand working of microphones and know concepts of optical recording.
4. To gain knowledge of public address system.
5. To gain knowledge of use of electronics in home and automobiles.

UNIT – I : Fundamentals of Television: Elements of Television system, Scanning Process, Scanning Methods and Aspect Ratio, Persistence of Vision and Flicker, Vertical Resolution, Picture Elements, Kell Factor, Horizontal Resolution and Video Bandwidth, Interlacing of Scanning Lines, Video Signals, Control Pulses, Composite Video Signal, TV Standards: 625 Line System.

UNIT – II : Color TV: Introduction, Color Spectrum, Compatibility Consideration, Color TV Signal, Luminance Signal, Chrominance Signal, Luminance and Chrominance, Recombination to Natural Color Voltages, Interleaving Process, Color Subcarrier Frequency, Phase Errors, Composite Color Signal, High Definition TV, Digital TV.

UNIT – III : Microphone and Optical Recording: Microphone: Characteristics of Microphones, Construction and working Principles of Microphones, Carbon Microphone, Dynamic Microphone, Capacitor Microphone, Tie Clip Microphone, Wireless Microphone. Optical Recording of Audio Signal: Disc, Processing of Audio signal, Readout from the Disc, Reconstitution of the Audio Signal.

UNIT – IV: Public Address System: Loudspeaker: Ideal Loudspeaker, Basic Loudspeaker, Capacitor Loudspeaker, Permanent Magnet Loudspeaker, Voice coil, Loudspeaker Impedance, Acoustic Impedance and Resonance, Woofers, Horn Type Tweeters. Loudspeaker System: Horns, Indoor Acoustics. Public Address system: Introduction to PA system, Planning a PA System, Speaker Matching System, PA System Characteristics, PA Amplifiers.

UNIT – V : Electronics in Home Appliances and Automobiles: Microwave Oven: Block diagram, LCD Timer with Alarm, Single Chip Controller, Washing Machine: Electronic Controller for Washing Machine, Washing Machine Hardware, Washing Cycles-Hardware and Software Development, Fuzzy Logic Washing Machine, **Electronics in Automobiles:** In Car Computers: Applications, Electronic Ignition, Electronic Ignition Lock System, Anti Lock Braking System, Electronically Control Suspension, Instruments Panel Displays, Ultrasonic Car Safety Belt System Air Bag System, Vehicle Proximity Detection System, Car Navigation System.

Text Book:

1. Consumer Electronics by S. P Bali, Pearson Publication
2. Color Television by S.P Bali, McGraw Hill.

Reference Book:

1. Monochrome and color TV by R.R. Gulati, 3 rd Edition, New Age International.



Chhattisgarh Swami Vivekananda Technical University, Bhilai

Name of program: Bachelor of Technology

Branch: Electronics & Telecommunication

Semester: VIII

Subject: Management Concepts & Techniques

Code: _____

**Total Theory Periods: 40
(Minimum)**

Class Tests: Two

**Total Tutorial Periods: 10
(Minimum)**

Assignments: Two

**ESE duration: Three Hours
35**

Maximum Marks: 100 Minimum Marks:

Course Objectives:

1. To enable the students to acquire knowledge about the principles of management
2. To get an idea of human resource management
3. To get an idea about marketing management
4. To give an insight to the production / operation management
5. To give an insight to the organization of a business and public sector companies

UNIT I : Basic Management and Techniques: Planning: Nature Purpose and Objectives of Planning, Organizing: Nature and Purpose of Organizing, Authority and Responsibility, Staffing, Performance Appraisal, Controlling: Process of Controlling, Control Techniques.

UNIT II : Human Resource Management: Nature and Scope of Human Resource Planning, Training and Development, Recruitment and Selection, Career Growth, Absenteeism, Grievances, Motivation and its types, Need of Motivation, Models of Motivation, Leaders, Types of Leaders,



Leadership Styles, Roles and Functions of Leaders, Conflict Management: Types and causes of Conflict, Group and Team Working, Organizational Design and Development.

UNIT III : Marketing Management: Marketing Environment, Industrial Markets (B2B Marketing) and Buyer Behavior, Marketing Mix, Overview of Advertising and Sales Promotion, Channels of Distribution. Financial Management and Accounting Concepts: Concept of Book Keeping, Overview of Financial Statements and Breakeven Analysis.

UNIT IV: Production/Operations Management: Production Systems, Facilities, Planning, Location, Layout and Movement of Materials, Materials Management, Maintenance Management, PERT and CPM.

UNIT V : Organizing a Business: Forms of Ownership Organization: Sole Proprietor, Partnership, Private and Public Ltd. Companies, Choice of suitable form of Business Organization. Public Sector: Central Government, Public Corporation, Local Government, Organization neither Public nor Private Sector, Clubs & Society, Cooperative Societies.

Text books:

1. Industrial Management and Engineering Economics, K. C. Arora, Khanna Pbs.
2. Industrial Engineering and Production Management, Martand Telsang, S. Chand
3. Industrial Management and Organization, Ahuja, Khanna Pbs.
4. Industrial Engineering and Management, O. P. Khanna, DRD.

Reference books:

1. Industrial Organization and Management, Ramchandran, Ramana Mutrhy, TMH.
2. Management Science, Ramchandra, TMH.
3. Industrial Engineering and Production Management, Mahajan, DRP.
4. Business Organization & Management by R.K. Sharma, Shashi K. Gupta, Kalyani Publisher, New Delhi.
5. Principles of Business Organisation by Y. K. Bhushan, S.Chand.

Course Outcomes:

At the completion of the course, the student will be able to:

1. Define the concept of management and discuss why organizations are needed, why managers are necessary, and why management is a challenge.
2. Identify the essential characteristics of decision making and indicate the range and types of decisions a manager is asked to make.

