PERIYAR UNIVERSITY
SALEM – 636 011

PERIYAR INSTITUTE OF DISTANCE EDUCATION
(PRIDE)

P.G. DIPLOMA IN TELECOMMUNICATION

NON-SEMESTER

REGULATION AND SYLLABUS

(Effective from the academic year 2008 – 2009 and thereafter)
OBJECTIVE OF THE COURSE:

The PG Telecommunication syllabus will enhance the student’s knowledge in the fields of Wire communication, Optical communication, Wireless communication, Satellite communication and Computer communications.

The course globally covers the specialized areas in the field of Fiber optics, ISDN, Broad band ISDN, Voice over IP and Video conferencing, it is aimed at making the students more employable. The course is also helpful to those whose are currently working in the telecommunication fields.

1. CONDITION FOR ADMISSION:

A candidate who has passed any degree of this University or any of the degree of any other University accepted by the syndicate as equivalent thereto subject to such conditions as may be prescribed therefore shall be permitted to appear and qualify for the Post Graduate Diploma in Telecommunication degree examination of this University after a course of study of ONE academic year.

2. DURATION OF THE COURSE:

The course for the Post Graduate Diploma in Telecommunication shall consist of one academic year.

3. ELIGIBILITY:

A candidate shall be eligible for the P.G. Diploma in Telecommunication if he/she has satisfactorily undergone the prescribed course of study for a period of not less than one year and passed the examinations in all the papers.
4. **COURSE OF STUDY**

The course of study shall comprise instruction in books prescribed from time to time.

- **COMMUNICATION SYSTEMS**
- **BASICS OF TELECOMMUNICATION**
- **DATA COMMUNICATION**
- **FIBER OPTICS AND SATELLITE COMMUNICATION**
- **ADVANCED NETWORKS**
- **MOBILE COMMUNICATION**
- **ADVANCED COMMUNICATION ENGINEERING**
- **PRACTICAL-I ANALOG AND BASIC COMMUNICATION LAB-I**
- **PRACTICAL-II COMMUNICATION LAB-II**
- **PROJECT:VIVA-VOCE**

5. **EXAMINATIONS:**

   The examination shall be three hours duration to each paper at the end of the year. The candidate failing in any subject(s) will be permitted to appear for each failed subject(s) in the subsequent examination. Practical Examination should be conducted at the end of the year.

6. **EMPLOYMENT OPPORTUNITIES:**

   - Telecommunication Industries
   - Telephone Exchanges
   - Satellite communication centers
   - Optical communication areas
   - Wireless communication centers
   - Military communication centers
   - Cell phone manufacturing Industries
   - Cell phone control room Engineer.
6. SCHEME OF EXAMINATIONS:

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<td>PROJECT: VIVA-VOCE</td>
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**TOTAL MARKS** 1100
7. **QUESTION PAPER PATTERN**

   **For theory:**
   
   TIME: 3 Hrs \hspace{1cm} MAX.MARKS: 100
   
   PART-A(5x5=25)
   
   (answer all the questions )
   
   (Two questions from each unit with internal choice)
   
   PART-B(5x15=75)
   
   (answer all the questions )
   
   (Two questions from each unit with internal choice)

   **For practical:**

   (Answer any one)

   TIME: 3 Hrs \hspace{1cm} MAX.MARKS: 100

   **Mark distribution:**
   
   Circuit \hspace{1cm} = 40 marks
   
   Experiment work \hspace{1cm} = 40 marks
   
   Correct output \hspace{1cm} = 20 marks

8. **PASSING MINIMUM:**

   A candidate shall be declared to have passed the examination in a theory/practical of study only if he/she scores not less than **50 marks** out of 100 in the university Examination.

9. **CLASSIFICATION OF SUCCESSFUL CANDIDATES:**

   Candidates who secure not less than 60% of the aggregate marks in the whole examination shall be declared to have passed the examination in **First class**. All other successful candidates shall be declared to have passed in second class. Candidates who obtain 75% of the marks in the aggregate shall be deemed to have passed the examination in **First class with distinction** provided they pass all the examinations prescribed for the course at the first appearance.
Unit – I  Communication Process

Elements of a communication system – Sources of information – Transmission and Reception of a signal – Basic antennas – Analog and digital types of communication.

Unit – II  Amplitude and Frequency Modulation

Definition of Amplitude modulation – Generation and detection of AM – SSB / DSB VSB modulation–AM radio transmitter and receiver-Definition of Frequency modulation – FM generation and demodulation – Block diagram of FM radio transmitter and receiver.

Unit – III  Pulse Modulation

Sampling theorem – Basic principles of pulse Amplitude modulation – Pulse width modulation – Pulse position modulation –Multiplexing- FDM-TDM-WDM.

Unit – IV  PCM and Basics of data Transmission and Reception

Principle of PCM – Quantization and quantization error Delta Modulations – Adaptive delta modulation – Time division multiplexing in PCM – Coherent reception – Binary ASK, - FSK – PSK-Comparison of ASK, FSK, PSK.

Unit – V  Microwave Devices

TEXT BOOKS

REFERENCE BOOKS
Unit - 1

**An over view of Telecommunication:**

Introduction-History of telecommunication-telecommunication network-Internet – Internet protocol-Classification of data network—Telecommunication standards.

Unit –II

**Electronics for telecommunication:**

Introduction-Communication system parameters- FDM –TDM-WDM.

Transmission media; introduction – Fiber optic cables- Cabling architecture.

Unit –III

**Voice communication:**


Unit- IV

**Wide area network and broad band technologies:**


Unit –V

**Network management:**

Introduction-Policy management-Evolution of network hardware and software-Network administration and maintenance-Network security-Configuration management – Telecommunication management network.
TEXT BOOKS

REFERENCE BOOKS
PAPER: 3 DATA COMMUNICATION

Unit – I:


Unit – II:


Unit – III:

Unit – IV:


Unit – V:


TEXT BOOKS


REFERENCE BOOKS

PAPER 4: FIBER OPTICS AND SATELLITE COMMUNICATION

Unit-I

Glass fiber fabrication: direct melting- high purity silica fibers by vapour deposition-cable design-splicing methods-connectors-fiber measurements-attenuation-dispersion- index profile.

Unit-II

Optical source and transmitter circuits; LED-LASER diodes-developments in LASER diode structures for photonic systems-DFB lasers-transmitter circuits.

Unit-III

Optical detectors and circuits: theory of solid state photo diodes - statistical view point of optical detection – avalanche photo diode – receiver sensitivity and bit error rate – receiver design.

Unit-IV


Unit-V


TEXT BOOKS

1. Optical fiber communication (principle and design)- A.Selvarajan S.Sekar T,Srinivas., Tata Mc Hill.
REFERENCE BOOKS

2. Optical fiber communication – keiser ., Tata Mc Hill.
PAPER: 5 ADVANCED NETWORKS

Unit-I


Unit-II


Unit-III


Unit-IV


Unit-V

Multimedia: Digitizing Audio and Video - Audio and Video Compression – Steaming stored and Live Audio and Video-Real Time Transport Protocol (RTP) - RTCP-Voice over IP

TEXT BOOKS

REFERENCE BOOKS

Unit-I


Unit-II


Unit-III


Unit-IV


Unit-V

TEXT BOOKS

REFERENCE BOOK
PAPER 7: ADVANCED COMMUNICATION ENGINEERING

Unit-I

Fundamental concepts of data communication:
Introduction – Data communication codes - Bar codes – Error control - Error detection – Error correction – Character synchronization – Line control circuits


Unit-II

Telephone circuit

The public telephone network
Introduction - Telephone transmission system environment – The public telephone network - Instruments – Local loops trunk circuits and exchanges - Automated central office switches and exchanges.

Unit-III

Cellular telephone concept:

Cellular telephone system:
Introduction - First generation analog phones - Personal communication systems – Second generation cellular phones - Digital cellular phone – Global system for mobile communication.
**Unit -IV**

*Microwave radio communications and system gain:*
Introduction- Advantages and disadvantages of microwave radio-Analog versus digital microwave-FM microwave radio stations –Microwave repeater radio stations –Microwave radio system gain.

**Unit -V**

*Satellite communications*
Introduction- FM satellite systems –Multiple accessing –Channel capacity- satellite radio navigation.

**TEXT BOOKS**

**REFERENCES BOOKS**
PAPER 8: ANALOG AND BASIC COMMUNICATION LAB-I

(ANY 10 -EXPERIMENTS)

1. Regulated power supply using zener diode
2. IC regulated power supply
3. R.C coupled amplifier – single stage
4. Hartley oscillator – Transistor
5. Colpitts oscillator – Transistor
6. Phase shift oscillator
7. Inverting amplifier / Non – Inverting amplifier
8. D/A Converter using ladder op-amp
9. Voltage integrator / Differentiator
10. Astable Multivibrator using op-amp
11. Monostable Multivibrator using op-amp
12. Sine Wave generator using op-amp
13. Basic filters using op-amp
14. AM modulation and detection
15. FM modulation and detection
16. PAM modulation and demodulation
17. Voltage controlled oscillator
18. Study of Satellite operations and frequency
PAPER :9: PRACTICAL-II:COMMUNICATION LAB-II

(ANY 10 –EXPERIMENTS)

1. LED characteristics
2. LASER characteristics
3. Photo detector characteristics
4. Fiber to fiber link
5. Fiber losses
6. Study of optical fiber
7. Optical fiber transmission and reception
8. Measurements of numerical aperture
9. Characteristics of Gunn diode oscillator
10. Study of directional couple
11. Study of MAGIC TEE
12. Study of HORN ANTENNA
13. TDM pulse amplitude modulation and demodulation
14. RF Transmitter
15. RF Receiver
16. Characteristics of optical fiber
17. Study satellite communication
18. Study of RADAR communications

PAPER 10: PROJECT:VIVA-VOCE

***END***