PERIYAR UNIVERSITY
SALEM – 11

SYLLABUS

M.Sc., TELE- COMMUNICATION
(PRIDE – NON-SEMESTER)

(EFFECTIVE FROM 2007-2008 ONWARDS)
PERIYAR UNIVERSITY, Salem - 11
M. Sc., TELE COMMUNICATION
(NON –SEMESTER)
Regulations
{Effective from 2007 – 2008}

1. CONDITION FOR ADMISSION :
A candidate who has passed B.Sc., (Tele communication)/ B.Sc., Electronics and Communication B.Sc (Electronics) / B.Sc (Physics) / B.Sc (Instrumentation) / B.Sc (Industrial Electronics). / B.Sc (Biomedical Instrumentation) / B.Sc Computer Science / B.C.A. degree of this University or any of the above degree of any other university accepted by the syndicate as equivalent thereto, subject to such condition as may be prescribed therefore shall be permitted to appear and qualify for the M.Sc Tele - communication degree examination of this university after a course of study of two academic years.

2. DURATION OF THE COURSE:
The course for the degree of Master of Tele - communication shall consist of two academic years.

3. COURSE OF STUDY
The course of study shall comprises instruction in the following subjects according to the syllabus and books prescribed from time to time.

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

Practical examinations for PG course should be conducted at the end of the Year.

At the end of second year viva-voce will be conducted on the basis of the dissertation / project report submitted by the student. The Viva – voce will be conducted by one internal and one external examiner jointly.

5. SCHEME OF EXAMINATIONS
The scheme of examinations as follows,
### I-YEAR

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Paper Code</th>
<th>Title of the paper</th>
<th>Duration</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>06PTEL01</td>
<td>Analog, Digital Electronics</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>06PTEL02</td>
<td>Analog, Digital and Optical Communication</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>3</td>
<td>06PTEL03</td>
<td>Telecommunication and Cellular Systems</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>4</td>
<td>06PTEL04</td>
<td>Advanced Microprocessors</td>
<td>3</td>
<td>100</td>
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<tr>
<td>5</td>
<td>06PTELP01</td>
<td>Practical – I: Communication Lab-I</td>
<td>3</td>
<td>100</td>
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</tbody>
</table>

### II-YEAR

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Paper Code</th>
<th>Title of the paper</th>
<th>Duration</th>
<th>Marks</th>
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<tbody>
<tr>
<td>6</td>
<td>06PTEL05</td>
<td>Wireless and mobile communication</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>7</td>
<td>06PTEL06</td>
<td>Microwave and radar communication</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>8</td>
<td>06PTEL07</td>
<td>C++ and Java programming</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>9</td>
<td>06PTELP02</td>
<td>Practical –II: communication lab –II</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>10</td>
<td>06PTETLPR01</td>
<td>Dissertation / Project work &amp; Viva-Voce (Project report (75) + Viva – Voce (25))</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Total 1000
6. QUESTION PAPER PATTERN:

Time: 3 Hours  Max. Marks – 100

PART – A: 5 x 5 = 25
(Answer all questions)
(Two questions from each unit with internal choice)

PART – B : 5 x 15 = 75
(Answer all questions)
(Two questions from each unit with internal choice)

Practical

Time : 3 Hours.  Max. Marks - 100
(One question either or type)

7. DISSERTATION (100 Marks)

a. Topic
The topic of the dissertation shall be assigned to the candidate before the end of first year and a copy of the same should be submitted to the University for approval.

b. Advisory committee
Each guide shall have a maximum of five students in science and maximum of seven for all Arts subjects.

There will be an advisory committee consisting of the guide as chairman and one member from the same department or allied departments of the college and a third member should be from other college preferably from Aided / Government colleges in the case of self financing college and vice – versa.

c. No. of Copies/ Distribution of Dissertation
The students should prepare three copies of dissertation and submit the same for the evaluation by examiners. After evaluation one copy is to be retained in the college library and one copy is to be submitted to the University (Registrar) and one copy can be held by the student.

d. Format to be followed
The formats / certificate for dissertation to be submitted by the students are given below:
Format for the preparation of project work

a. Title page
b. Bonafide certificate
c. Acknowledgement
d. Table of content

CONTENTS

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<td>3.</td>
<td>Materials and methods</td>
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<tr>
<td>4.</td>
<td>Results</td>
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<td>5.</td>
<td>Discussion</td>
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<tr>
<td>6.</td>
<td>Summary</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Reference</td>
<td></td>
</tr>
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</table>

Format of the title page

TITLE OF THE DISSERTATION

Dissertation submitted in part fulfillment of the requirement for the degree of
Master of Science / Master of Arts in__________________________
to the Periyar University, Salem-636 011.

By
Students name : 
Register Number : 
College / University Department
Year :
Format of the certificate

CERTIFICATE

This to certify that the dissertation entitled............................................
........................................ submitted in part fulfillment of the requirement of the
degree of Master of Science / Master of Arts in ......................... To the
Periyar University, Salem is a record of bonafide research work carried out by
........................................ under my supervision and guidance and that no part of
the dissertation has been submitted for the award of any degree, diploma,
fellowship or other similar titles or prizes and that the work has not been
published in part of full in any scientific or popular journals or magazines.
Date:
Place:

Chairman, Advisory Committee,

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Approved by
Chairman:
Members:
1. 
2. 

External Examiner

Guidelines for approval of PG guides for guiding students in their
research for submitting dissertation.

   i. The person seeking for recognition as guide should have.
   ii. M.Phil / M.A/M.Sc degree with first class / second class
   iii. Should have 3 years of active teaching / research
       experience.

2. They should have published atleast one research paper in a National
   journal authored solely or jointly. Procedure for submitting application for
   approval as guides
      a. The University will on request give prescribed application form.
b. The filled in applications should be submitted before the close of said date by the University.

c. such applications should be routed through the Principal of their respective institutions with specific recommendations.

d. All relevant proofs should be submitted along with the applications.

3. Approval

The committee constituted for the purpose will scrutinize the applications and recommend for approval / rejection.

Orders will then be passed by the authority of the university and communicated to each member individually through the Principal.

8. Passing Minimum

The candidate shall be declared to have passed the examination if the candidate secure not less than 50 marks in the University examination in each paper.

For the practical paper, a minimum of 50 marks out of 100 marks in the University examination and the record notebook taken together. There is no passing minimum for the record notebook. However submission of a record notebook is a must.

For the project work and viva voce a candidate should secure 50% of the marks for pass. The candidate should compulsory attend viva voce examination to secure pass in that paper.

Candidate who do not obtain the required minimum marks for a pass in a paper/ project report shall be required to appear and pass the same at a subsequent appearance.

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 the 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.

Candidates who pass all the examinations prescribed for the course in the first instance and within a period two academic years from the years of admission to the course only are eligible for **University Ranking**.

**10. Maximum duration for the completion of the PG Programme**

The maximum duration for completion of the PG programme shall not exceed five years.

**11. Commencement of this regulation**

These regulations shall take effect from the academic year 2007-08, i.e., for students who are to be admitted to the first year of the course during the academic year 2007-08 and thereafter.

**12. Transitory provision**

Candidates who are admitted to the PG course of study before 2007-2008 shall be permitted to appear for the examinations under those regulations for a period of three years i.e, up to and inclusive of the examination of April / May 2011. Thereafter, they will be permitted to appear for the examination only under the regulations then in force.

**13. Regulations of project work**

a. Students should do their three months project work in company / institutions.

b. The candidate to the department should submit the format which includes the topic of the dissertation, and the same should be submitted to the University for approval.

c. Each internal guide shall have maximum of FIVE students.

d. Periodically the project should be reviewed minimum three times by the advisory committee consisting of the guide and one member from the same department and the third member (min:5 years experience) should be from other institutions / organization.

The students should use OHP/Power Point Presentation during their project Viva Voce examinations.
OBJECTIVES

1. The syllabus of M.Sc., Tele-Communication is enriched and necessary changes have been made in the course pattern and papers. This will enable the students to acquire through knowledge both in theory and practical.

2. An emphasis is given more to practicals in advanced experiments related to communication field.

3. Since, the course is paraprofessional enough practical training is necessary when the student goes to industries. Hence at the end of every semester the practical papers are included in the syllabus to meet out this demand or challenges.

4. After successful completion of this course a student can pursue higher engineering courses like ME / M.Tech in Electronics & Communication with good GATE score.

5. The thrust in given is the curriculum by considering various recent developments in Tele-Communication, Bio-medical Instruments and Networking. This exposure will make, the students to be eligible for service / Engineering in the field of Electronics industries / Communication Industries / Bio-medical Industries / Networking Companies and Software Industries.

SUGGESTIONS

1. Master Of science in Tele-Communication covers the basic topics of the field, however the regular updating of the syllabus is necessary according to the recent academic developments in this field.

2. To provide further improvement in the teaching, quality of, the teachers in this university areas should be given short term training programmes in the specialized fields.

3. The colleges offering this course under Periyar University have to equip the library and laboratory adequately to conduct this course.
PART – A (5x5 = 25)

Answer all the questions:

1a) Discuss About evolution of microprocessor.(or)
   
   b) Write note on I/O Devices of microprocessor.

2a) Explain register set of microprocessor.(or)
   
   b) Discuss about the pin out of 8085.

3 a) What is address decoding, explain.(or)
   
   b) Define the term RAM refreshing.

4a) Discuss about 8086 flag register.(or)
   
   b) Explain about Motorola 68000 registers.

5a) Write note on Segmentation. (or)
   
   b) Discuss Pentium processor pipelining.

PART- B(5X15=75)

Answer all the questions

6 a) Explain the block diagram of 8085 processor.(or)
   
   b) Explain about microcontroller architecture.

7 a) Discuss the various instructions of 8085 in detail.(or)
   
   b) Explain the various addressing modes of microprocessor.

8 a) Explain 8259 architecture.(or)
   
   b) Discuss about 8257.

9 a) Explain 8086 architecture.(or)
   
   b) Explain the addressing modes of 8086 with examples.

10 a) Explain the architecture of Pentium processor (or)
     
     b) Explain addressing modes of Pentium processor.
PAPER :1 Analog and Digital Electronics

Unit – I
Number Systems:
Binary signals – Binary Number System – Decimal Number conversion of binary, decimal, octal and hexadecimal numbers – BCD Numbers-Logic gates.


Unit – II
Digital Arithmetic Circuits
Binary addition and subtraction – signed and unsigned Binary number’s – Addition in 1’s and 2’s Compliment – Addition in 9’s and 10’s compliment – Half adder and Full adder – Parallel adder – Half and Full subtractor – Multiplexer – Demultiplexer – Encoder Decoder.

Unit – III
Flip Flop and Sequential Logic Circuits
Binary Ladder D/A converter – Successive approximations A/D converter.

Unit -IV
Junction diode, construction, characteristics, – Zener diode – Construction –characteristics, application of seven segment LCD, LED, tunnel diode, PIN diode, varactor, varistor.

Unit – V
Introduction of transistor – Construction and operation of transistors – Configuration and characteristics of CE– JFET, Constructions and characteristics - MOSFET construction and characteristics, MOSFET as resistor- construction, operation, and V-I characteristics of UJT, SCR, TRIAC.

Reference books
1. Digital Technology principles and Practice – Virendra Kunmar – New Age International
2. Malvino and Leech Digital Principles and Application
3. Basic electronics – B.L. Theraja – S. Chand
4. Basic Electronics – V.K. Metha

**PAPER 2 : ANALOG , DIGITAL AND OPTICAL COMMUNICATION**

**Unit – I Pulse Modulation System**


Delta modulation – PCM transmission – calculation of quantization noise – the output signal power – the output signal to noise ratio in PCM – Delta pulse code modulation – comparison of PCM and DM – comparison of PCM and FM communication systems.

**UNIT – II Digital Modulation Techniques**

Phase shift keying – binary PSK differential PSK Differentially encoded PSK (DEPSK) – Quadrature PSK – M ary PSK – FSK Binary FSK similarity of BFSK and BPSK.

**Unit – III**

Fiber Optic Cables, Light Sources And Light Detectors


**Unit - IV**


**Unit – V Fiber Optical Communication Components and Systems**


**Reference Books**

PAPER 3: TELECOMMUNICATION AND CELLULAR SYSTEMS

UNIT-I

Instruments and signals

Introduction-the subscriber loop-standard telephone set-basic telephone call procedures-call progress tone and signals-cordless telephone – caller ID – electronic telephones-paging systems

UNIT-II

Telephone circuit

Introduction –the local subscriber loop – telephone message – channel noise and noise weighting- units of power measurements –transmission parameters and private line circuits –voice frequency circuit arrangements – cross talk.

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:


UNIT-IV

Microwave radio communications and system gain:

UNIT -V

Satellite communications
Introduction- history of satellites –keplers’ law- satellite orbits –
geosynchronous orbits –antenna look angles –satellite classifications ,spacing
and frequency allocation- satellite antenna radiation pattern.Satellite multiple
–accessing arrangements:
Introduction-FDM/FM satellite systems –multiple accessing –channel
capacity-satellite radio navigation.

References books :
1. Advanced electronic communications systems –Tomasi-sixth edition-
PHI.
2. Telecommunication switching systems and networks – thiagarajan
viswanath- PHI 2002- First edn.
3. Introduction to telecommunication –marion cole – pearson – 2 nd edn
2006.

PAPER :4 ADVANCED MICROPROCESSORS

UNIT-I
Evolution of Microprocessor – Typical Micro Computer Architecture –
Memory –memory addressing - Timing diagram -Input/Output .

UNIT – II
Addressing modes – Timing Methods- 8085 CPU pins and Associated Signals
– instruction set- – Interrupt System – SID and SOD Lines – 8085 Based
System Design.

UNIT – III
Interfacing Devices: Introduction – Types of Interfacing Devices –
Addressing Decoding for I/O – Input/Output Ports – Programmable Interrupt
Controller 8259 – Programmable DMA Controller: 8257 Programmable DMA
Controller – Analog Input Devices – Analog Output Devices.
UNIT – IV


UNIT – V

- Introduction- register set- internal architecture- addressing modes of 80286.


Reference books:


PAPER: 5 PRACTICAL –I

Communication Lab-1

(ANY 15)

Using 8085:

1. A/D conversion
2. Printer interface
3. D/A interface
4. A/D Interface
5. Hex key interface
6. Stepper interface
7. Traffic light systems
Electronic communication:
8. AM modulation
9. FM modulation and detection
10. Automatic gain control
11. Voltage gain control
12. Pulse amplitude modulation
13. Pulse width modulation
14. Pulse position modulation
15. Study of PLL characteristics
16. Digital phase detector
17. Pulse code modulation
18. Study of cable TV system
19. Microwave experiments – Klystron
20. Microwave experiments – Reflex Klystron

PAPER:6 WIRELESS AND MOBILE COMMUNICATION

Unit I
Principles of Wireless Networks
   Introduction – Wireless network and cellular topologies – cell fundamentals – capacity expansion techniques – network planning to CDMA.

Unit II
Wireless Networks Operators
   Introduction - Mobility management – location management hand off management – Mobile IP – Radio resources and power management – Power

**Unit III**

**GSM and CDMA Techniques**


Introduction of CDMA – CDMA forward and reverse channel – Packet and frame formats – Mobility and radio resource management.

**Unit IV**

**Mobile data networks**

Introduction - Data oriented CDPD network – Architecture – Mobility support – protocol layer.


**Unit V**

**Broad Band Networks**


**Text Books**


**Reference**

PAPER 7: MICROWAVE AND RADAR COMMUNICATION

UNIT I

Radio Propagation: Loss in free space: Atmospheric effects on propagations and diffraction effects, Fading: Multi path fading, power fading. Fading due to earth bulge: K factor fading, surface duct fading, Blackout fading, Diversity to Mitigate Fading.

UNIT II


UNIT III

Basic Principle of Satellite Communication: Satellite system, orbits elevation angle, Geo stationary orbit, Frequency bank, Flux density, Multiple access technique (FDMA, TDMA, and CDMA qualitative analysis). Intelsat communications, Earth Stations.

UNIT IV

Fundamentals of Radar Systems: Radar range equation, radar frequencies pulse considerations, Minimum detectable signal, Receiver noise, Integration of radar pulses, pulse repetition frequencies.

UNIT V


Reference Books
UNIT I
Basic Concepts of OOP – Structure of C++ - Data types - Variables – Control Structures – Functions – Classes and Objects – Constructors and Destructors.

UNIT II

UNIT III

UNIT IV
Introduction to Java – Features of Java – Methods and Classes – Array, Strings and Vector – Inheritance – Packages and Interfaces.

UNIT V

Reference books:
OPTICAL FIBER COMMUNICATION:
1. LED interface
2. LASER Interface
3. Photo detector
4. OFT power supply
5. Optical power meter
6. Optical power source
7. Study of optical fiber
8. Optical fiber transmission and reception
9. Optical fiber links
10. Characteristics of gunn diode oscillator
11. Study of directional coupler
12. Study of TEE
13. Study of MAGIC TEE
14. Study of HORN ANTENNA
15. TDM pulse amplitude modulation and demodulation
16. RF Transmitter
17. RF Receiver
18. Characteristics of optical fiber.
19. Satellite communication
20. Study of RADAR communications

PAPER : 10   PROJECT VIVA- VOCE