PERIYAR UNIVERSITY
SALEM – 11

SYLLABUS
B.Sc., TELE- COMMUNICATION
(PRIDE – NON-SEMESTER)
(EFFECTIVE FROM 2007-2008 ONWARDS)
PERIYAR UNIVERSITY, SALEM – 11
{PRIDE – SYLLABUS}
B.Sc., TELE- COMMUNICATION
(Effective From 2007-2008 Onwards)

Regulations

1. Condition for Admission:
   A candidate who has passed Higher secondary examination as per norms set by the Government of Tamil Nadu or an examination accepted as equivalent thereto by the Syndicate subject to such conditions as may be prescribed thereto are permitted to appear and qualify for the B.Sc., Telecommunication Degree Examination of this university after a course of study of three academic years.

2. Duration of the Course:
   The course for the degree of Bachelor of B.Sc Tele communication shall consist of three academic years divided into three non-semesters.

3. Course of Study:
   The course of study comprises with the following subjects according to the syllabus and books prescribed from time to time.

   Foundation course
   1. Tamil / Hindi / Malayalam / French / German
   2. English

   Allied subjects
   I Year:
   1. Mathematics – I

   II Year:
   1. C++ Programming
Main Subjects:

Title of the Paper

I – year:

Electricity and semiconductor devices
Practical-I Basic Electronics Lab

II year:

Analog and digital communication
Practical- II: Analog and Basic communication lab

III Year

Data communication and network architecture
Tele communication systems
Mobile communication
Microprocessor and interfacing
Practical- III: Microprocessor and Optical Communication lab

4. Examinations:

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

The practical examinations for UG course should be conducted at the end of the year.
5. Scheme of Examinations:
The Scheme of Examinations as follows:

<table>
<thead>
<tr>
<th>S.No</th>
<th>Code</th>
<th>Title of the Paper</th>
<th>Duration Hrs</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>FIRST YEAR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>07UFTA01</td>
<td>Tamil – I / Hindi – I/French – I/Malayalam – I</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>07UFEN01</td>
<td>English – I</td>
<td>3</td>
<td>100</td>
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<tr>
<td>3</td>
<td>07UTEL01</td>
<td>Electricity and Semiconductor devices</td>
<td>3</td>
<td>100</td>
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<tr>
<td>4</td>
<td>07UMAA01</td>
<td>Allied – I: Mathematics I</td>
<td>3</td>
<td>100</td>
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<tr>
<td>5</td>
<td>07UTELP01</td>
<td>Practical-I: Basic Electronics lab</td>
<td>3</td>
<td>100</td>
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<td><strong>SECOND YEAR</strong></td>
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<td>6</td>
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<td>Tamil – I / Hindi – I/French – I/Malayalam – I</td>
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<td>07UFEN02</td>
<td>English-II</td>
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<td>8</td>
<td>07UTEL02</td>
<td>Analog and digital communication</td>
<td>3</td>
<td>100</td>
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<td>9</td>
<td>07UCSA01</td>
<td>Allied –II: C ++ Programming</td>
<td>3</td>
<td>100</td>
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<td>10</td>
<td>07UTELP02</td>
<td>Practical- II : Analog and Basic communication lab</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>THIRD YEAR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>07UTEL03</td>
<td>Data communication and network Architecture</td>
<td>3</td>
<td>100</td>
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<tr>
<td>12</td>
<td>07UTEL04</td>
<td>Tele communication Systems</td>
<td>3</td>
<td>100</td>
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<tr>
<td>13</td>
<td>07UTEL05</td>
<td>Mobile communication</td>
<td>3</td>
<td>100</td>
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<tr>
<td>14</td>
<td>07UTEL06</td>
<td>Microprocessor and interfacing</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>15</td>
<td>07UTELP03</td>
<td>Practical- III: Microprocessor and optical Communication lab</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total Marks</strong></td>
<td></td>
<td>1500</td>
</tr>
</tbody>
</table>
6. Question Paper Pattern for theory:

6.1 Question Paper Pattern with out Practical

Time : 3 Hours Max. Marks – 100

Part A: $10 \times 2 = 20$
(Answer all questions)
(Two questions from each unit)

Part B: $5 \times 4 = 20$
(Answer all questions)
(One question from each unit with internal choice)

Part C: $5 \times 12 = 60$
(Answer all questions)
(One question from each unit with internal choice)

6.2 Question paper pattern for practical

Time : 3 Hours Max. Marks – 100

Answer all the questions
(One question)

Mark Distribution

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Circuits</td>
<td>-</td>
<td>40 Marks</td>
</tr>
<tr>
<td>Calculations</td>
<td>-</td>
<td>25 Marks</td>
</tr>
<tr>
<td>Result</td>
<td>-</td>
<td>15 Marks</td>
</tr>
<tr>
<td>Record</td>
<td>-</td>
<td>20 Marks</td>
</tr>
</tbody>
</table>

7. Passing Minimum :

The candidate shall be declared to have passed the examination if the candidate secure not less than 40 marks in the University examination in each theory paper without practical and 30 marks in the theory paper with practical.

For the practical paper, a minimum of 40 marks out of 100 marks in the University Examination and the record notebook taken together is required to pass the examination. In the case of practical paper with 25 as maximum marks a minimum of 10 marks in the University Practical examination and the record notebook taken together is required to pass the examination. There is no passing minimum of the record notebook. However submission of a record notebook is a must.
8. 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 of three academic years from the year of admission to the course only are eligible for University Ranking.

9. Maximum duration for the completion of the UG Programme:

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

10. 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.

11. Transitory Provision:

Candidates who are admitted to the UG 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.
12. Course Objectives:

1. The Syllabus of B.Sc., Tele-Communication enable the students acquire more knowledge in theory and practicals.
2. The syllabus focuses on advanced experiments / technical skills in the field of communication.
3. After completion of the course, students can pursue higher degree courses like M.Sc Tele communication/M.Sc., (Electronics)/M.Sc., (Applied Electronics)/ M.Sc., (Electronics and communication) / M.Sc., (Computer Science) / MCA / M.Sc., (Bio-medical Instrumentation) and MBA.
4. After completion of the course students are eligible to work as Tele communication Engineer /Electronic Service Engineer / Electronic Hardware and Software Engineer / Maintenance Engineer etc.,
PAPER 3: ELECTRICITY AND SEMICONDUCTOR DEVICES

Unit – I

Unit – II
Direct current (D.C) Alternating current (A.C) comparison of DC voltage and AC voltage, ohms law, electrical power, series current, voltage drop, voltage division rule, parallel circuit, current division rule.

Unit – III

Unit – IV
Junction diode, construction, characteristics, static resistance, dynamic resistance, average ac resistance, diode application – 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 CB, CE, CC –, JFET, - MOSFET construction – characteristics, MOSFET as resistor, MOSFET handling, UJT – construction, operation, Intrinsic stand off ratio – V-I characteristics, Construction and operation of UJT, SCR, TRIAC.

Text books
1. Applied electronics – R. Sedha – S. Chand PHI

Reference Books
3. Electricity and Magnetism – Brijlal and Subramaniam (2005)S.Chand&Co
5. Physics of semiconductor devices – AMSLEY, willey Interscienc
Unit – I  
Matrices


Unit – II  
Theory Of Equations


Unit – III  
Differential Calculus


Unit – IV

Partial differentiation – Euler’s theorem – Curvature – Radius of Curvature in Cartesian and polar co – ordinates.

Unit – V  
Vector Analysis

Gradient, divergence and curl of a vector point function – solenoid and irrotational vectors – unit normal vector – directional derivative – problems - Second order derivatives.

Text books

1. T.K. Manickavasagam pillai – Allied mathematics
2. P.R. Vittal – Allied Mathematics
PRACTICAL- I
PAPER 5: Basic Electronics Lab
(Any 15 )

1. Basic Logic gates using diode / Transistors
2. V-I Characteristics of Junction Diode
3. Zener diode characteristics
4. Photoconductive in semiconductor (LDR)
5. Phototransistor characteristics
6. Transistor Characteristics (CB configuration)
7. SCR Characteristic
9. Verification of logic gates using Ic's
10. NAND / NOR as a universal g
11. Design of Sum of products
12. Half and full adder
13. Half and full subtractor
14. Multiplexer and Demultiplexer
15. Encoder, Decoder
16. Study of flip flops – RS and D flip flop flip flop
17. Shift register
18. Astable multi vibrator
19. Monostable multi vibrator
20. Bistable multi vibrators

Reference Books

1. Electronics Laboratory Primer - A Design Approach - S. Poorna Chandar B. Sasikala – S. Chand
PAPER 8 : ANALOG AND DIGITAL COMMUNICATION

Unit – I
Amplitude Modulation
Definition of Amplitude modulation – Generation and detection of AM –
Generation and detection SSB / DSB VSB modulation – Block diagram of AM
radio transmitter and receiver – Pre-emphasis – de-emphasis.

Unit – II
Angle Modulation
Definition of Frequency and phase modulation – FM generation and
demodulation – Block diagram of FM radio transmitter and receiver – Narrow
band and wide band.

Unit – III
Pulse Modulation
Sampling theorem – Basic principles of pulse Amplitude modulation –
Pulse width modulation – Pulse position modulation.
Multiplexing: TDM- FDM-WDM-DWDM

Unit – IV
Pulse Code Modulation 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 Propagation and Devices
Introduction to antennas – Propagation of Radio waves- Ground wave
– sky wave – Space Wave – Introduction to microwave system – Frequency
range – Waveguides (qualitative analysis only) – cavity resonators – Two
cavity Klystron – reflex klystron – Magnetron.

Text Books
1. Fundamentals of communication systems – Sanjeeva Gupta-kanna
publishers.

Reference books
1. Electronics communication Systems - Kennedy - TMH
2. Principles of communication systems – Taub and Schiling - TMH
3. Communication Electronics - ND. Deshpande, DA. Deshpande,
Rangole – Tata McGraw Published
ALLIED -II
PAPER 9: C++ PROGRAMMING

Unit I


Unit II

Data types in C++ - Derived types, loops and relational – Branching statement and logical operators – functions in C++ Programming, modules.

Unit III

Classes and objects – working with classes – class inheritance – constructors and destructors.

Unit IV

Operator overloading and type conversions – inheritance – pointers, virtual functions and polymorphism.

Unit V

Managing console I/O operations working with files – input & output files – templates and exception handling.

Text books

1. “Object oriented programming”, E. Balagurusamy, TMH (Unit –I)
2. “Object oriented Analysis Design”, Grady booch, The Benjamin cummings publishing company. (Unit II-V)

Reference Books

RACTICAL - II
PAPER 10: ANALOG AND BASIC COMMUNICATION LAB
(ANY 15 )

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

Reference Books

1. Electronics Laboratory Primer - A Design Approach - S. Poorna Chandar B. Sasikala – S. Chand
UNIT-I


UNIT -II


The www: the client side – the server side – writing a web page in HTML – locating information on the web.

UNIT - III


Unit IV

ISDN: overview of ISDN-transmission structure-user access-ISDN protocols.

BROAD BAND ISDN: NTI,-NTI plus and voice communication basis: terminating ISDN connections via NTI- Basis of NTI and NTI plus. ATM based service and applications- B-ISDN.

Unit V

Desktop video conference: The down sizing of video conference-desk top video conferencing systems- video conferencing requirements-leading desktop video conferencing systems- elements of video conferencing style.

Text and Reference books:

Paper : 12 Telecommunication systems

Unit -I
An over view of Telecommunication:

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:

Text books
1. Introduction to telecommunication-Gokhale-Delmar- Thomson.

Reference books
Paper :13 Mobile communication

Unit-I

GSM-mobile services – system architecture – radio interfaces – protocols – localization and calling – hand over and security-new date services.

Unit –II

GEO- LEO-MEO –routing localization- hand over.
Wireless LAN: Infrared and radio transmission-infrastructure and ad-hoc network-IEEE802.11- HIPERLAN – blue tooth.

Unit –III


Unit – IV

Mobile transport layer ;Traditional: congestion control – slow start- fast retransmit/ fast recovery- implication of mobility. Classification of TCP improvements : indirect- snooping- mobile TCP-fast transmission /receiving-transmission/time out frequency-selective retransmission

Unit-V


Text book


Reference books:

1. Introduction to wireless mobile systems- dhama prakash agarwal-Thomson -2007.
PAPER 14: MICROPROCESSOR AND INTERFACING

Unit – I
Microcomputer system and hardware: Introduction to microcomputer – microprocessor and assembly language – Microprocessor architecture and microcomputer system – 8085 based microcomputer systems.

Unit – II
Introduction to basic instruction and programming techniques: Data transfer (copy) instruction – arithmetic operations – logic operations – branch operation – writing assembly language programs – addressing modes.

Unit – III
Interfacing; 8255 programmable peripheral interface – 8259 programmable interrupt controller – 8279 keyboard/display interface – 8253 programmable interval timer.

Unit – IV
16 Bit microprocessor – Register set- block diagram – addressing modes.

Unit-V
Pentium microprocessor – Register set – Block diagram – integer and floating pipe lining- addressing modes.

Text Books
3. Introduction to Microprocessor – A.P. Mathur - TMH
MICROPROCESSOR 8085:

1. Addition, Subtraction, 8 bit and 16 bit
2. Multiplication, Division, 8 bit and 16 bit
3. Square and Square root of the given number.
4. Finding Maximum / Minimum numbers in an array
5. Ascending / Descending of array
6. Number of Zero, Positive, and Negative number of array.
7. Fill a block and transfer a block
8. ADC
9. DAC
10. Stepper motor control
11. Traffic light control
12. Speed control of DC motor
13. Rolling Display

Optical fiber communication:
14. study of LED module
15. study of LASER module
16. study of PHOTO DETECTOR
17. study of optical power source
18. study of optical fiber links
19. RF transmitter
20. RF receiver.