



மனோன்மணியம் சுந்தரனார் பல்கலைக்கழகம்  
**MANONMANIAM SUNDARANAR UNIVERSITY**

**SYLLABUS FOR DIPLOMA IN MOBILE SERVICES  
PROGRAM OFFERED THROUGH DIRECTORATE OF VOCATIONAL  
EDUCATION (COMMUNITY COLLEGES AND VOCATIONAL SKILL DEVELOPMENT  
CENTRES) FROM 2019 - 2020**



கல்விசார் நிலைக்குழுக் கூட்டம்

**MEETING OF THE STANDING COMMITTEE ON  
ACADEMIC AFFAIRS HELD ON WEDNESDAY  
THE 22<sup>nd</sup> JANUARY 2020**

**DIPLOMA IN MOBILE SERVICES**

செல்லிடப்பேசி பழுதுபார்த்தலில் பட்டயம்

**SCHEME OF EXAMINATION**

Subject Code	Title of the Course	Credits	Hours	Passing Minimum
<b>First Semester</b>				
C19MS11/E19MS01	Fundamental of Electronics	6	90	40/100
C19MS12/E19MS02	Introduction to Mobile Telephone Systems	6	90	40/100
C19MS13/E19MS03	Basic Concepts of Multimedia	6	90	40/100
C19CE10/E19CE10	Communicative English	6	90	40/100
C19MSP1/E19MSP1	Practical I-Basic Concepts of Multimedia	4	120	40/100
<b>Second Semester</b>				
C19MS21/E19MS04	Fundamentals of Computer Networks	6	90	40/100
C19MS22/E19MS05	Digital Logic Fundamentals	6	90	40/100
C19LS23/E19LS05	Life Skill	6	90	40/100
C19MS24/E19MS06	Mobile Troubleshooting	6	90	40/100
C19MSP2/E19MSP2	Practical II-Mobile Troubleshooting and Project	8	120	40/100

**Eligibility for admission:** Pass in 10<sup>th</sup>std examination conducted by the Govt. of Tamil Nadu Board of Secondary Education, Government of Tamil Nadu or any other equivalent examination.

**Examination:** Passing Minimum for each Course is 40%. Classification will be done on the basis of percentage marks of the total marks obtained in all the Courses and as given below:

- 40 % but less than 50 % - Third class  
 50 % but less than 60 % - Second class  
 60 % and above - First class

**Theory Paper**

Internal Marks-25

External Marks-75

**Syllabus****First Semester:-**

- Course I - Fundamental of Electronics  
 Course II - Introduction to Mobile Telephone Systems  
 Course III - Basic Concepts of Multimedia  
 Course IV - Communicative English  
 Course V - Practical I-Basic Concepts of Multimedia

**Second Semester:-**

- Course VI - Fundamentals of Computer Networks  
 Course VII - Digital Logic Fundamentals  
 Course VIII - Life Skill  
 Course IX - Mobile Troubleshooting  
 Course X - Practical II-Mobile Troubleshooting and Project

**\*(Semester Pattern for Community College Only)**

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**SEMESTER I**  
**Course I**  
**(C19MS11/E19MS01)Fundamental of Electronics**

**Unit I** **18 Hrs**

**Semiconductor Diodes and Rectifiers:** Introduction, general characteristics, energy levels, extrinsic materials n & p type, ideal diode, basic construction and characteristics, DC & AC resistance, equivalent circuits, drift & diffusion currents, transition & diffusion capacitance reverse recovery times, temperature effects, diode specifications, different types of diodes (Zener, Varactor, Schouky, Power, Tunnel, Photodiode & LED), Half wave & full wave rectifiers. Switched Mode Power Supply.

**Unit II** **18 Hrs**

**Bipolar junction transistor:** Introduction, Transistor, construction, transistor operations, BIP characteristics, load line, operating point, leakage currents, saturation and cut off mode of operations, Eber-Moll's model.

**Unit III** **18 Hrs**

**Bias Stabilization:** Need for stabilization, fixed bias, emitter bias, self bias, bias stability with respect to variation in  $I_{CO}$ ,  $V_{BE}$  &  $\beta$ , Stabilization factors.  
**Small signal amplifiers:** CB, CE, CC configurations, hybrid model for transistor at low frequencies, RC coupled amplifiers, mid band model, gain & impedance, comparisons of different configurations, Darlington pair, Hybrid  $\pi$ -model at high frequencies, Cascaded amplifiers.

**Unit IV** **18 Hrs**

**Feedback Amplifiers:** Feedback concept, Classification of Feedback amplifiers, Properties of negative, Feedback amplifiers, Impedance considerations in different Configurations, Examples of analysis of feedback Amplifiers. **Field Effect Transistor:** Introduction, Classification, FET characteristics, Operating point, Biasing, enhancement & Depletion type MOSFETS

**Unit V** **18 Hrs**

**Building Blocks of Analog ICs:** Differential amplifier, Op-amp Model, op-amp parameters, virtual ground, Inverting and non-inverting amplifiers, differential amp, Summers, Instrumentation amplifier, Voltage to current, current to voltage Converter, Integrator, Differentiators Current mirrors, Active Loads, Level shifters and output stages.

**Text Books:**

1. "Integrated Electronics: Analog & Digital Circuits & Systems", Jacob Millman, Christos C. Halkias, TMH. 2<sup>nd</sup> edition 1996
2. "Opamps and Linear Integrated Circuits" Gayakwad,, PHI Pvt. Ltd., 3<sup>rd</sup> edition 2000
3. "Linear Integrated Circuits", Choudhary and Jain, New Age International (P) Limited , 2<sup>nd</sup> edition 2003

**Reference Books:**

1. "Microelectronics Circuits", Sedra and Smith , Oxford University Press. 4<sup>th</sup> edition

## Course II

### (C19MS12/E19MS02)Introduction to Mobile Telephone systems

#### **UNIT I: Mobile Technologies**

**18 Hrs**

Cellular Frequency Reuse – Handover – Speech Compression – Modulation Types – Access Multiplexing - FDMA- TDMA –CDMA-SDMA –Packet Data-Space Mobile Devices: SIM – PCMCIA Air cards- Mobile Telephones – External Radio modems

#### **UNIT II: Mobile Systems**

**18 Hrs**

Base Stations – Radio, Antenna, Towers – Communication links – Mobile Switching Center -Authentication, Authorization and Accounting – Inter Working Function – Message Center – SGSN – GGSN-BSE-VMS-PSTN-PPDN-Network Databases (HLR, VLR, EIR, BC, AuC, NPDB) Mobile System Operation: Initialization – Ideal – Access Control and Initial Assignment – Connected Mode – Packet Data Scheduling Algorithm – Registration.

#### **UNIT III: Analog Systems (1G)**

**18 Hrs**

Advanced mobile Phone Services – Total Access communication system- Nordic mobile Telephone Systems-Narrow band AMPS – Japanese mobile Cellular system – CNET – Mats-E;DIGITAL CELLULAR SYSTEM: GSM – North America TDMA – Extended TDMA – CDMA – Japanese personnel Digital Cellular.

#### **UNIT IV: Packet Digital Cellular system**

**18 Hrs**

GPRS – EDGE – CDMA2000™ 1XRTT – Evolution Data Only (1xEVDO) - Evolution Data and Voice (1xEVDV). WIDEBAND DIGITAL CELLULAR SYSTEMS (3G): WCDMA – CDMA2000 – TD-SCDMA.

#### **Unit V: Mobile Services**

**18 Hrs**

Voice Services: Circuit Switched Voice – Push to Talk (PTT). Messaging - Data Services: Circuit Switched Data – Packet Switched Data.

#### **Text Book:**

- **Introduction to Mobile Telephone Systems** by Lawrence Harte, 2<sup>nd</sup> Edition, ALTHOS Publishing, 2006.

## Course III

### (C19MS13/E19MS30) Basic concepts of Multimedia

#### Unit I

18 Hrs

**what is multimedia?** **Introduction to Making Multimedia:** The stages of a project- what you need- **Multimedia skills and Training:** The terms – **Macintosh and windows production platforms:** Macintosh Versus PC – The Macintosh and Windows Computers- **Hardware Peripherals:** connection- Memory and storage Devices – Input Devices- Output Hardware- Communication Devices

#### Unit II

18 Hrs

**Basic Tools:** Text Editing and Word Processing Tools – OCR Software- Painting and Drawing Tools – 3-D Modeling and Animation Tools – Image – Editing Tools – Sound Editing Tools – Animation, Video and Digital Movies Tools **Making Instant Multimedia** : Linking Multimedia Object – Office suites- Word Processors – spread sheets – Databases- presentation Tools.

#### Unit III

18 Hrs

**Multimedia Authoring Tools** : Types of Authoring Tools – card and page Based Authoring Tools- Icon – Based Authorised Tools – Time Based Authoring Tools – Object – Oriented Authoring Tools – Cross – Platform Authoring Notes. **Text** : The Power of Meaning – About Fonts and Faces –Using Text in Multimedia – Computers and Text – Font Editing and Design Tools – Hypermedia and Hypertext-

#### Unit IV

18 Hrs

**Sound:** The Power of Sound – Multimedia System Sounds- MIDI Versus Digital Audio – Digital Audio – Making MIDI Audio – Audio file formats – Working with sound on the Macintosh – Notation Interchange File Format (NIFF) – Adding Sound to your multimedia project – Towards professional sound – The Red Books standard production tips.

#### Unit V

18 Hrs

**Images:** Making Still Images – color- Image File formats. **Animation:** The Power of motion – Principles of Animation – Making Animation That Work – **Video** : Using video – How video works – Broadcast Video Standards – Integrating Computers and Television – shooting and Editing Video – Video Tips – Recording Formats – Digital video.

#### Recommended Texts

1. Tay Vaughan - 1999– Multimedia : Making it work – Fourth Edition – Tata McGraw – Hill Edition.
2. Walterworth john A- 1991- Multimedia Technologies and Application – Ellis Horwood Ltd. – London.
3. John F koegel Buford – Multimedia Systems – Addison Wesley – First Indian Reprint

## Course IV

### (C19CE10/E19CE10)COMMUNICATIVE ENGLISH

#### 1. **Basic Grammar:**

- a. Review of grammar
- b. Remedial study of grammar
- c. Simple sentence
- d. Word passive voice etc.

#### 2. **Bubbling Vocabulary:**

- a. Synonyms
- b. Antonyms
- c. One – work Institution

#### 3. **Reading and Understanding English**

- a. Comprehension passage
- b. Précis – writing
- c. Developing a story from hints.

#### 4. **Writing English**

- a. Writing Business letters.
- b. Paragraph writing
- c. Essay writing
- d. Dialogue writing

#### 5. **Speaking English**

- a. Expressions used under different circumstances
- b. Phonetics

#### **Reference :**

1. V.H.Baskaran – “English Made Easy”
2. V.H.Baskaran – “English Composition Made Easy”  
(Shakespeare Institute of English Studies, Chennai)
3. N.Krishnaswamy – “Teaching English Grammar”  
(T.R.Publication, Chennai)
4. “Life Skill” – P.Ravi, S.Prabakar and T.Tamzil Chelvam,  
M.S.University, Tirunelveli.

## **Course V**

### **Practical I**

#### **(C19MSP1/E19MSP1)Basic Concepts of Multimedia**

##### **Lab Exercises**

1. Procedure to create an animation to represent the growing moon.
2. Procedure to create an animation to indicate a ball bouncing on steps.
3. Procedure to simulate movement of a cloud.
4. Procedure to draw the fan blades and to give proper animation.
5. Procedure to display the background given (filename: tulip.jpg) through your name.
6. Procedure to create an animation with the following features.
7. Procedure to simulate a ball hitting another ball.
8. Procedure to design a visiting card containing at least one graphic and text information.
9. Procedure to take a photographic image. Give a title for the image. Put the border. Write your names. Write the name of institution and place.
10. Procedure to prepare a cover page for the book in your subject area. Plan your own design.

**SEMESTER II**  
**Course VI**  
**(C19MS21/E19MS04) Fundamentals of Computer Networks**

**Unit I**

**18 Hrs**

Need for Computers – Data Communication Fundamentals –Data Transmission: Serial and parallel transmission – Communication Modes – Transmission Modes – Error Control. Transmission Media: Two wire open lines – Twisted Pair – Coaxial Cable – Optical Fiber- Unguided Transmission Media

**Unit II**

**18 Hrs**

**Local Area Network:** Architecture – Characteristic of LAN – LAN Topologies: Bus Topology Tree Topology- Star Topology – Ring Topology. **High Speed Networks:** High Speed LAN – Fast Ethernet Systems: 100 Base T Overview - 100 Base T Physical Media - 100 Base T Interconnection Mechanism - 100 Base T Operation

**Unit III**

**18 Hrs**

**Gigabyte Ethernet:** Gigabyte Ethernet Protocol Architecture – The FDDI Network – Operations of FDDI – Structure of FDDI – Frame Format – FDDI Token Passing. **Wireless LAN:** Need for Wireless LAN – Advantages of Wireless LAN – Components of Wireless LAN- Working of Wireless LAN

**Unit IV**

**18 Hrs**

**Transmission Media:** Radio wave Technology – Narrowband Technology – Direct Sequence Spread Spectrum Technology - Frequency Hopping Spread Spectrum - Wireless LAN types – Protocols for Wireless LAN – Uses of Wireless LAN. Infrared Technology – Characteristics of Infrared Transmission – Direct Modulation – Operating Modes - Benefits and Drawbacks

**Unit V**

**18 Hrs**

**Bluetooth Technology:** The Evolution – Need for Bluetooth Technology – Bluetooth Products – Technology – Network Architecture – Security – Hardware Architecture – Software Architecture – Applications. **ISDN:** ISDN Channels – ISDN Services – ISDN Layers – Broadband ISDN: B-ISDN Architecture – Functional Architecture – B – ISDN User Network Interface and Reference Points – B-ISDN Reference Configuration – Broadband Terminal Equipment – Transmission Structure.

**TEXT BOOK**

1. Computer Networks Fundamentals & Applications , R.S Rajesh, K.S Easwarakumar, R Balasubramanian, Vikas Publications 2012

**REFERENCE BOOK**

1. Data Communication and Networking, Behrouz A. Forouzan Fifth Edition.



## Course VII

### (C19MS22/E19MS05)Digital Logic Fundamentals

#### **UNIT: I Number System**

**18 Hrs**

Binary – Decimal – Octal – Hexadecimal; Number System Conversion: Binary to Decimal, Decimal to Binary, Hexadecimal to Binary, Binary to Hexadecimal, Octal to decimal.

#### **UNIT: II Digital Arithmetic**

**18 Hrs**

Binary Addition – Half Adder-Full adder- N-bit Parallel Binary Adder- BCD Addition - Binary Subtraction – 1's Compliment of number system – 2's Compliment of number system – Subtraction with 2's Compliment -

#### **UNIT: III Logic Gates**

**18 Hrs**

What is Gate - AND Gate - Operation of AND Gate – OR Gate – operation of OR Gate – Application of OR Gate - Inverter (NOT) Gate – NAND Gate – Operation of NAND Gate – NOR Gate – Exclusive NOR Gate.

#### **UNIT: IV Boolean Algebra &Simplification**

**18 Hrs**

Boolean Algebra – Boolean Algebra and Expression – Laws & Rules of Boolean Algebra – Demorgan's Theorem – Simplifications using Boolean Algebra – Standard forms of Boolean Expression – Boolean Expression & Truth Table.

#### **UNIT: V Combinational Logic**

**18 Hrs**

Encoder- Decoder - Code Converters – Multiplexers – Demultiplexers – Flip Flop – Applications of Flip Flop.

#### **Text Book**

- Digital Electronics by Subrata Ghoshal, 2012.

#### **Reference Book**

- Digital Fundamentals by Thomas.L.Floyd, 10<sup>th</sup> Edition,2011.

## Course VIII

### (C19LS23/E19LS05) Life Skill

#### I Life Coping or adjustment

- (a) External and internal influence in one's life
- (b) Process of coping or adjustment
- (c) Coping with physical change and sexuality
- (d) Coping with stress, shyness, fear, anger far live and criticism.

#### II Attitude

- (a) Attitude
- (b) Self acceptance, self – esteem and self actualization
- (c) Positive thinking

#### III Problem Solving

- (a) Goal Setting
- (b) Decision Making
- (c) Time Management and stress Management.

#### IV Computers

- (a) Introduction to Computers
- (b) M.S.Office
- (c) Power Point

#### V Internet

- (a) Introduction to internet
- (b) E – mail
- (c) Browsing

#### References:

- 1) Life Skill Programme course I & II by Dr. Xavier Alphona MCRDCE Publications. R.K.Mutt Road, Chennai – 28
- 2) ஆளுமை பண்பு வளர்த்தல் மற்றும் தகவல் தொடர்பு by M.Selvaraj Community College,Palayamkottai
- 3) “Life Skill” –P.Ravi, S.Prabahar & T.Tamil Chelvam, M.S. University, Tirunelveli

## **Course IX**

### **(C19MS24/E19MS06)Mobile Troubleshooting**

#### **Unit I**

**18 Hrs**

Cellular Communication – Transmitting – Receiving –BTS (Base Transceiver Station)- BSC(Base Station Control) - MSC(Mobile Station Control) - Wireless Communication – Infrared – GPRS –Bluetooth – Wi-Fi – WiMax

#### **Unit II**

**18 Hrs**

Touch Screen Introduction – Types of Touch Screen – Resistive – Capacitive – Infrared – Surface Acoustic Wave- Touch Working Principle

#### **Unit III**

**18 Hrs**

Mobile Virus- Mobile Operating System – Different Types of Operating System – Android – Symbion- Other OS

#### **Unit IV**

**18 Hrs**

Printed Circuit Board (PCB) – Different types of IC – block diagram and Schematic Diagram of Different Mobile phones

#### **Unit V**

**18 Hrs**

Basic Parts of mobile phones and its working - Mic – Speaker – Buzzer – Antenna – Tower Network – Display – Battery Connector

#### **Text Book**

Aftab Ahmed ,”Wireless and Mobile Data Networks” , A John Wiley & Sons, Inc

#### **Reference book**

1. J. Maraia Shanthi, “Mobile Communication ” ARS Publication
2. Gordon A. Gow and Richard k. Smith, “Mobile and Wireless Communications” Open University Press

## **Course X**

### **(C19MSP2/E19MSP2)Practical II**

#### **Mobile Troubleshooting and Project**

##### **List of experiments for mobile troubleshooting:**

1. Assemble and disassemble the mobile phone using basic toolbox.
2. Cleaning the PCB board with warm up process using IPA LIQUID and BLOWER.
3. IC removing and reballing using lower solidering Iron, led and paste.
4. Boost up the battery voltage using battery booster.
5. Battery Connector repairing using multimeter.
6. Checking and Testing the mobile components using the multimeter.
7. Soldering and Desoldering the mobile components using soldering iron, led and paste.
8. Jumper techniques and solutions using soldering iron, led and paste.
9. Tracking process in PCB board.
10. OS installation using universal flash software

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