



மனோன்மணியம் சுந்தரனார் பல்கலைக்கழகம்

MANONMANIAM SUNDARANAR UNIVERSITY

**SYLLABUS FOR DIPLOMA IN ELECTRONIC SECURITY & CCTV CAMERA
SYSTEMS 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 22nd JANUARY 2020**

DIPLOMA IN ELECTRONIC SECURITY & CCTV CAMERA SYSTEMS

மின்னணுவியல் பாதுகாப்பு மற்றும் கண்காணிப்புக் கருவி அமைப்புகளில் பட்டயம்

SCHEME OF EXAMINATION

Subject Code	Title of the Courses	Credit	Hours	Passing Minimum
Semester I				
C19ES11/E19ES01	Basic Electronics	6	90	40/100
C19ES12/E19ES02	Visual & Advanced Security System	6	90	40/100
C19ES13/E19ES03	Essentials of Computers	6	90	40/100
C19CE10/E19CE10	Communicative English	6	90	40/100
C19ESP1/E19ESP1	Practical I-Basic Electronic – Practical knowledge of Electronic Components	4	90	40/100
Semester II				
C19ES21/E19ES04	Entrepreneurship and small business	6	90	40/100
C19ES22/E19ES05	Video Technology for Security system	6	90	40/100
C19LS23/E19LS05	Life skill	6	90	40/100
C19ESP2/E19ESP2	Practical II-Visual and Advanced Security System – Installing and servicing	4	120	40/100
C19ESPW/E19ESPW	Project	10	150	40/100

Eligibility for admission: Pass in 10thstd 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 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	: Basic Electronics
Course-II	: Visual & Advance security system
Course-III	: Essentials of computers
Course-IV	: Communicative English
Course-V	: Practical I - Basic Electronics - Practical Knowledge of Electronic components

Second Semester:

Course-VI	: Entrepreneurship and small business
Course-VII	: Video Technology for Security System
Course-VIII	: Life Skill
Course-IX	: Practical II-Visual & Advance security system – Installing & Servicing
Course-X	: Project

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

Preamble of the Program:

Electronic security system refers to any electronic equipment that could perform security operations like surveillance, access control, alarming or an intrusion control to a facility or an area. Determination of a type of security system is purely based on area to be protected and its threats. It is the process of watching over a facility which is under suspicion or area to be secured; main part of the surveillance electronic security system consists of camera or CCTV cameras which forms as eyes to surveillance system. System consists of different kinds of equipment which helps in visualizing and saving of recorded surveillance data. The close-circuits IP cameras and CCTVS transfers image information to a remote access place. Our core educational programs offer vocational, career-oriented courses for students wishing to pursue career options in Electronic Security & CCTV Camera Systems. We are offering our short term program in Electronic Security & CCTV Camera Systems for students, who will be employed in organizations upon successful completion of program. The heightened risks and threat perceptions in our environment demand a significant improvement in the quality and effectiveness of the first responder at all important corporate entities, institutions and places of public importance, including government offices. The course curriculum has been meticulously designed upon consultation with experts in the field of Electronic Security & CCTV Camera Systems, to help our students successfully emerge as competent Security Executives/Loss Prevention Executives. We are committed to providing our students with a progressive career path that leads them to become efficient professionals. The tools and techniques to be imparted in our courses have been validated by experts both from India and abroad. We envisage Diploma in Electronic Security & CCTV Camera Systems students, will continuously raise the bar in industry with progressive benchmarks comparable with the best in the world.

Semester I
COURSE – I
(C19ES11/E19ES01) BASIC ELECTRONICS

OBJECTIVES:

To study about basic electronic equipment and theory like flow of electrons, types of power supply, resistance, capacitance, analog and digital signals, and storage device.

UNIT -I

18 Hrs

Type of materials- Current – Flow of Electrons – Voltage – Watt – frequency – other measurements and units.

UNIT-II

18 Hrs

Type of power supplies – DC source – battery types – advantages of DC source – AC source – merits and demerits of AC – AC to DC Conversion - Precautions in working with power supplies.

UNIT-III

18 Hrs

Resistance - Capacitance - Inductance - Transformer - step Up and step down transformers - Tools and Instruments - Measuring tools - Measurements – Instruments – Volt meter – Ammeter – ohm meter – connection of measurements – using digital multimeter – clamp meter – calculating power and other factors.

UNIT-IV

18 Hrs

Analog signals – demerits of analog signals –digital signals – merits and demerits of digital signals – basic conversions – storage of digital signals – storage devices – digital capacity Disk and Drives

Unit V

18 Hrs

Definition of logic Gates- Basic Logic gates - Positive and negative logic - Universal gate - Exclusive OR gate - Diode and Gate- Half adder-Full adder- Half Subtractor-Full subtractor.

Reference books:

1. Basic Electronics (Solid State), B.L Theraja, S. Chand Publication.
2. A text book of Electrical Technology_Vol-1 and 2, B.L. Theraja and A.K. Theraja, S.Chand Publication.

COURSE –II
(C19ES12/E19ES02)VISUAL & ADVANCE SECURITY SYSTEM

OBJECTIVES:

This core syllabus to teach about visual & advance security system include TV and camera picture formation, Camera imaging methods, Video Management, Digital video recorders and Additional security systems.

UNIT-I

18 Hrs

Introduction to TV and camera – Picture formation methods – frames and motions – frame rate and flicker – International standards in video formats – digital video formats.

UNIT-II

18 Hrs

Camera a glance – Camera imaging methods – Type of camera sensors – video format in analog cameras – video formats in digital cameras – frame rate and pixels – selecting camera types – Range of cameras Indoor and outdoor cameras – color and monochrome cameras – IR and night vision cameras – Special cameras – Camera mounting and fixing – Observation cameras – Remote handling of cameras

UNIT-III

18 Hrs

Video Management: Introduction, CCTV Cameras, CCD Camera Basics, Traditional CCTV System, Video Recording, Drawbacks, Digital Video Recording, Features, Functionalities, Digital Vs Analog Recording, Digital Video Management System – Introduction, Features, Advancements & Differences from Earlier Video Techniques, TCP/IP Networking Fundamentals, System Network Load Calculations, Network Design.

UNIT-IV

18 Hrs

Digital video recorders – Recording method – backup devices interfacing devices – connection with cameras – Cable type and distance of coverage – connectors - Noise control in transmission – Display

UNIT-V

18 Hrs

Additional security systems – Motion detection – proximity detection – Un authorized access control - biometric security systems – remote access through internet and mobile phones – Access managements in remote access.

Reference books:

1. Reinhold A. Carlson Robert A. Di Giandomenico, 'Understanding Building Automation Systems: Direct Digital Control, Energy Management, Life Safety, Security Access Control, Lighting, Building', 1st edition (R.S. Means Company Ltd), (1991)

COURSE – III
(C19ES13/E19ES03) ESSENTIALS OF COMPUTERS

OBJECTIVES:

This syllabus helps the students to impart the subject knowledge about computer, operating systems, services of operating systems and basic applications of computer.

UNIT-I

18 Hrs

Introduction to Computers- Introduction, Characteristics of Computers, Block diagram of computer. Types of computers and features, Mini Computers, Micro Computers, Mainframe Computers, Super Computers. Types of Programming Languages (Machine Languages, Assembly Languages, High Level Languages). Data Organization, Drives, Files, Directories. Types of Memory (Primary And Secondary) RAM, ROM, PROM, EPROM. Secondary Storage Devices (FD, CD, HD, Pen drive) I/O Devices (Scanners, Plotters, LCD, Plasma Display) Number Systems Introduction to Binary, Octal, Hexadecimal system Conversion, Simple Addition, Subtraction, Multiplication.

UNIT-II

18 Hrs

Operating System and Services in O.S. Dos – History, Files and Directories, Internal and External Commands, Batch Files, Types of O.S. Windows Operating Environment Features of MS – Windows, Control Panel, Taskbar, Desktop, Windows Application, Icons, Windows Accessories, Notepad, Paintbrush.

UNIT-III

18 Hrs

Editors and Word Processors Basic Concepts, Examples: MS-Word, Introduction to desktop publishing. Spreadsheets and Database Packages Purpose, usage, command, MS-Excel, Creation of files in MS-Access, Switching between application, MS-PowerPoint.

Unit IV

18 Hrs

Internet: World Wide Web, web servers, web clients, web sites, web pages, web browsers, blogs, news groups, HTML, web address, e-mail address, downloading and uploading files from a remote site. Internet protocols.

Unit V

18 Hrs

Introduction to Networking- Advantages of Networking- Basic Features- LAN- MAN and WAN- simple-PC Based Network: Example- block diagram- Mode of operation and characteristic features.

Reference books:

1. Fundamental of Computers – By V.Rajaraman B.P.B. Publications
2. Fundamental of Computers – By P.K. Sinha
3. MS-Office 2000(For Windows) – By Steve Sagman
4. Introduction to computer.

Course IV
(C19CE10/E19CE10)COMMUNICATIVE ENGLISH

OBJECTIVES:

To expose students to the fundamentals of academic and professional communication in order to develop professionals who can effectively apply communication Skills, theories and best practices to meet their academic, professional and career communication need.

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
(C19ESP1/E19ESP1)PRACTICAL I
Basic Electronic – Practical knowledge of Electronic Components

OBJECTIVES:

This course helps the students to impart the practical knowledge of the electrical & Electronics components includes basic logic gates, diode characteristics, operational amplifier, characteristics of LED, Transistor input and transfer characteristics Basic Electronics - Practical Knowledge of Electronic components

Semester II

Course VI

(C19ES21/E19ES04)ENTREPRENEURSHIP AND SMALL BUSINESS

OBJECTIVES:

This syllabus helps the students to impart the subject knowledge Management roles and functions in a small business, Principles of double-entry book-keeping and find out the Issues in small business marketing.

UNIT-I

18 Hrs

Er.-Entrepreneurship-Enterprise: Conceptual issues. Entrepreneurship vs. Management. Roles and functions of er in relation to the enterprise and in relation to the economy. Entrepreneurship is an interactive process between the individual and the environment. Small business as seedbed of Entrepreneurship. [The teachers should emphasize to students the desirability as well as feasibility of a career in Entrepreneurship in the Indian scenario.] Entrepreneur competencies, Entrepreneur motivation, performance and rewards.[The teachers may make use of Entrepreneurship Development Institute of India's Inventory of Entrepreneur Competencies and National Institute of Entrepreneurship and Small Business Developments training kit for arousing Entrepreneur motivation and capacity and capability building].

UNIT-II

18 Hrs

Opportunity scouting and idea generation: role of creativity and innovation and business research. Sources of business ideas. Entrepreneur opportunities in contemporary business environment, for example opportunities in net-work marketing, franchising, business process outsourcing in the early 21 century.[The students be advised to visit various product/service franchises, BPO concerns and meet up/down links in the net-work marketing.] The process of setting up a small business: Preliminary screening and aspects of the detailed study of the feasibility of the business idea and financing/non-financing support agencies to familiarize themselves with the policies/programs and procedures and the available schemes.] Preparation of Project Report and Report on Experiential Learning of successful and unsuccessful entrepreneurs. [The students may be advised to develop a structured instrument [questionnaire] for conducting surveys of the various aspects of entrepreneur/enterprise. They may also be advised to prepare a comprehensive business plan. The desirability and feasibility of liaison with relevant funding and non-funding agencies may also be explored.

UNIT-III

18 Hrs

Management roles and functions in a small business. Designing and re-designing business process, location, layout, operations planning and control. Basic awareness on the issues impinging on quality, productivity and environment. Managing business growth. [The pros and cons of alternative growth options: internal expansion, acquisitions and mergers, integration and diversification. Crisis in business growth.

UNIT-IV**18 Hrs**

Principles of double-entry book-keeping: journal entries, cash-book, pass book, and Bank Reconciliation Statement, ledger accounts, trail balance and preparation of final accounts: Trading and Profit and Loss Account; Balance-sheet. Brief introduction to Single-Entry system of record keeping. Sources of risk/venture capital, fixed capital, working capital and a basic awareness of financial services such as leasing and factoring.

UNIT-V**18 Hrs**

Issues in small business marketing. The concept and application of product life cycle [plc], advertising and publicity, sales and distribution management. The idea of consortium marketing, competitive bidding/tender marketing, negotiating with principal customers. The contemporary perspectives on Infrastructure Development, Product and Procurement Reservation, Marketing Assistance, Subsidies and other Fiscal and Monetary Incentives. National state level and grass-root level financial and non-financial institutions in support of small business development.

Reference books:

1. Brandt, Steven C., The 10 Commandments for Building a Growth Company, Third Edition, Macmillan Business Books, Delhi, 1977
2. Bhide, Amar V., The Origin and Evolution of New Business, Oxford University Press, New York, 2000.
3. Dollinger M.J., 'Entrepreneurship strategies and Resources', 3rd edition, Pearson Education, New Delhi 2006.
4. Desai, Vasant Dr. (2004) Management of small scale enterprises New Delhi: Himalaya Publishing House,
5. Taneja, Gupta, Entrepreneur Development New Venture Creation,: 2nd ed. Galgotia Publishing Company
6. Holt, David H., Entrepreneurship: Strategies and Resources, Illinois, Irwin, 1955.
7. Panda, Shiba Charan, Entrepreneurship Development, New Delhi, Anmol Publications.
8. Patel, V.G., The Seven Business Crises and How to Beat Them, Tata-Mcgraw, New Delhi, 1995.
9. SIDBI Report n Small Scale Industries Sector[latest edition]
10. Verma, J.C., and Gурpal Singh, Small Business and Industry-A Handbook for Entrepreneurs, Sage, New Delhi, 2002
11. Vesper, Karl H., New Venture Strategies, [Revised Edition], New Jersey, Prentice Hall, 1990

Course VII

(C19ES22/E19ES05)Video Technology for Security system

OBJECTIVES:

This core syllabus educate about video technology includes video protection, video system basic of lens, video transmissions and type of video recorders.

Unit I

18 Hrs

Video Protection – Asset protection – Emergency and disaster plan- Security Investigations- safety – the role of the Guard – Employee Training and Education – Synergy through Integration – Applications- Video system solutions- overt Vs Covert Video – Security Surveillance Applications – Safety applications- Video Access Control

Unit II

18 Hrs

Video system - Role of Light and Reflection – The Lens function – camera function- transmission function – monitor function – recording function - Scene illumination- Natural light – Artificial light – scene characteristics – target size – reflectivity- effects of motion – scene temperature

Unit III

18 Hrs

Lenses – Fixed focal length lens – Zoom lens – Veri-focal lens- Panoramic -360o lens – convert Pinhole lens – special lenses – Cameras – Scanning Process – Raster-Digital & progressive scan – solid-state cameras – Analog-digital-Internet – Low-light- level-intensified camera- thermal imaging camera

Unit IV

18 Hrs

Transmission – hard-wired- Coaxial cable- Unshielded Twisted Pair- LAN, WAN, Intranet and Internet – Wireless – Fiber Optics – Standard Switchers – Microprocessor-Controlled Switchers

Unit V

18 Hrs

Monitors- Monochrome-color-CRT, LCD, Plasma Displays – Audio/video – Recorders – Video Cassette Recorder (VCR)- Digital Video Recorder (DVR)- Optical Disk

Reference books:

1. Herman Kruegle, CCTV surveillance Video Practices and Technology, (2nd Ed), Butterworth- Heinermann Publications.

Course VIII

(C19LS23/E19LS05)Life Skill

OBJECTIVES:

To educate about Life skills includes on Life Coping or adjustment, Attitude, Problem solving and basic computer Knowledge with internets

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

(C19ESP2/E19ESP2)PRACTICAL II

Visual and Advanced Security System – Installing and servicing

OBJECTIVES:

This course helps the students to impart the practical knowledge of the Electronic Security & CCTV Camera Systems includes advances security systems installing and service. Visual & Advance security system – Installing & Servicing

COURSE X

(C19ESPW/E19ESPW)PROJECT

OBJECTIVES:

Diploma in Electronic Security & CCTV Camera Systems consists of one elective course and full time project of 12 credits. The project report shall be in the form of Thesis and should be hard bound. Viva voce examination will be conducted.
