MANNAR THIRUMALAI NAICKER COLLEGE

PASUMALAI, MADURAI– 625 004

(An Autonomous Institution Affiliated to Madurai Kamaraj University)

(Re-accredited with 'A' Grade by NAAC)

B.Sc., Maths with CA

SYLLABUS AND REGULATIONS

UNDER
CHOICE BASED CREDIT SYSTEM (CBCS)
(For those who joined during 2018-2019 and after)

Qualification for Admission

Candidate should have passed the Higher Secondary Examination conducted by the Board of Higher Secondary Education, Government of Tamil Nadu with Mathematics as one of the subjects in Higher Secondary Education.

Duration of the Course

The students shall undergo the prescribed course of study for a period of three academic years (six semesters).

Subject of Study

Part I: Tamil
Part II: English
Part III:

1. Core Subjects
2. Allied Subjects
3. Electives

Part IV :

1. Non Major Electives
2. Skill Based Subjects
3. Environmental Studies
4. Value Education

Part V :

Extension activities

The scheme of Examination

The components for continuous internal assessment are:

Two tests and their average	--15 marks
Seminar /Group discussion	--5 marks
Assignment	--5 marks
Total	--25 marks

Pattern of the questions paper for the continuous Internal Assessment

(For Part I, Part II, Part III, NME & Skilled Paper in Part IV)

The components for continuous internal assessment are:

Part –A

Six multiple choice questions (answer all) 6 x01= 06 Marks

Part –B

Two questions (‘either …. or ‘type) 2 x 07=14 Marks

Part –C

One question out of two 1 x 10 =10 Marks

Total 30 Marks

Pattern of the question paper for the Summative Examinations:

Note: Duration- 3 hours

Part –A

Ten multiple choice questions 10 x01 = 10 Marks

(No Unit shall be omitted; not more than two questions from each unit.)

Part –B

Five Paragraph questions (‘either …. or ‘type) 5 x 07 = 35 Marks

(One question from each Unit)

Part –C

Three Essay questions out of five 3 x 10 =30 Marks

(One question from each Unit)

Total 75 Marks

The Scheme of Examination (Environmental Studies and Value Education)

Two tests and their average	--15 marks
Project Report	--10 marks*
Total	--25 marks

** The students as Individual or Group must visit a local area to document environmental assets – river / forest / grassland / hill / mountain – visit a local polluted site – urban / rural / industrial / agricultural – study of common plants, insects, birds – study of simple ecosystem – pond, river, hill slopes, etc.

Question Paper Pattern

Pattern of the Question Paper for Environmental Studies & Value Education only) (Internal)

Part –A

(Answer is not less than 150 words)

Four questions (‘either …. or ‘type) 4 x 05=20 Marks

Part –B

(Answer is not less than 400 words)

One question (‘either …. or ‘type) 1 x 10=10 Marks

Total 30 Marks

Pattern of the Question Paper for Environmental Studies & Value Education only) (External)

Part –A

(Answer is not less than 150 words)

Five questions (either or type) 5 x 06 =30 Marks

(One question from each Unit)

Part –B

(Answer is not less than 400 words)

Three questions out of Five 3 x 15 = 45 Marks
each unit (One question from each Unit)

Total 75 Marks

Minimum Marks for a Pass

40% of the aggregate (Internal +Summative Examinations).
No separate pass minimum for the Internal Examinations.
27 marks out of 75 is the pass minimum for the Summative Examinations.

PROGRAMME SPECIFIC OUTCOMES

PSO1: To enable the students to pursue further studies in advanced computer science and computational mathematics.

PSO2: To develop the skills to create software applications using a systematic approach

PSO3: To know the relationships between graph theory and networks and to provide the necessary basic concepts of a few statistical and numerical methods and give procedures for solving numerically different kinds of problems

PSO4: To evaluate indefinite integrals by basic integration formula and substitution rule and to enhance the ability to identify assess and interpret complex situations using mathematical Methods.

MANNAR THIRUMALAI NAICKER COLLEGE (AUTONOMOUS)
B.Sc (Mathematics (CA)

Course Pattern

Study Component	I Sem	II Sem	III Sem	IV Sem	V Sem	VI Sem	Total Hours	Total Credit	No.of courses	Total marks
Part – I Tamil	6(3)	6(3)	6(3)	6(3)			24	12	4	400
Part –II English	6(3)	6(3)	6(3)	6(3)			24	12	4	400
Part –III										
Core Subjects	6(4)	6(5)	5(5) 5(5)	5(5) 5(5)	5(5) 5(5) 6(5) 6(5)	5(5) 5(5) 6(5) 6(5)	76	69	14	1400
Elective Subjects					6(5)	6(5)	12	10	2	200
Allied Subjects	6(4)	4(3)	4(3)	6(4)			20	14	4	400
Allied Subjects (P)		2(1)	2(1)				4	2	2	200
Allied Mathematics **For B.Sc CS** **For B.Sc IT** **For B.Sc E&C** **For B.C.A** **For B.Sc Chemistry**	 **4(4)** **4(4)** **-** **4(4)**	 **4(4)** **4(4)** **4(3)** **4(4)**	 **4(4)** **4(4)** **-** **-** **4(4)**	 **4(4)** **-** **6(4)** **-** **4(4)**	 **6(4)**	 **-** **2(2)** **-** **-** **6(4)**	 **16** **14** **10** **8** **20**	 **16** **14** **7** **8** **16**	 **4** **4** **2** **2** **4**	 **400** **400** **200** **200** **400**
Part-IV										
Skill Based Subject	2(2) 2(2)	2(2) 2(2)			2(2)	2(2)	12	12	6	600
Environmental Studies / Value Education	2(2)	2(2)					4	4	2	200
Non major elective			2(2)	2(2)			4	4	2	200
Part V										
Extension activities				0(1)			0	1	1	100
Total	**30 (20)**	**30 (21)**	**30 (22)**	**30 (23)**	**30 (27)**	**30 (27)**	**180**	**140**	**41**	**4100**

SEMESTER –I

Subject code	Subjects	No. of Courses	Hours / week	Credits	Maximum Marks		
					Int.	Ext	Total
18UTAG11	**பகுதி-Iதமிழ்** **தற்கால கவிதையும்** **உரைநடையும்**	1	6	3	25	75	100
18UENG11	English-I: Exploring Language Through Literature-1	1	6	3	25	75	100
18UMCC11	**Part –III Core Subject** Differential Calculus	1	6	4	25	75	100
18UMCA11	**Part –III Allied Subject** Introduction to MS-Office Introduction to MS-Office - Lab	1 -	4 2	4 -	25	75	100
18UMCS11	**Part –IV Skill Subject** Numerical Aptitude	1	2	2	25	75	100
18UMCS12	Trigonometry	1	2	2	25	75	100
18UEVG11	**Part –IV Mandatory Subject** Environmental Studies	1	2	2	25	75	100
	Total	**7**	**30**	**20**	**175**	**525**	**700**

SEMESTER – II

Subject code	Subjects	No. of Courses	Hours / week	Credits	Maximum Marks		
					Int	Ext	Total
18UTAG21	பகுதி-I தமிழ் பக்தி இலக்கியமும் நாடகமும்	1	6	3	25	75	100
18UENG21	English-II: Exploring Language Through Literature-II	1	6	3	25	75	100
18UMCC21	**Part –III Core Subject** Theory of Equations and its applications	1	6	5	25	75	100
18UMCA21	**Part –III Allied Subject** Programming in C	1	4	3	25	75	100
18UMCAP1	Programming in C – Lab	1	2	1	40	60	100
18UMCS21	**Part –IV Skill Subject** Linux Operating System	1	2	2	25	75	100
18UMCSP1	Shell Programming Lab	1	2	2	40	60	100
18UVLG21	**Part –IV Mandatory Subject** Value Education	1	2	2	25	75	100
	Total	**8**	**30**	**21**	**230**	**570**	**800**

SEMESTER –III							
18UTAG31	**Part –I Tamil** காப்பிய இலக்கியமும் சிறுகதையும்	1	6	3	25	75	100
18UENG31	**Part –II English** Exploring Language Through Literature-III	1	6	3	25	75	100
	Part –III Core Subjects						
18UMCC31	Integral Calculus	1	5	5	25	75	100
18UMCC32	Sequences and Series	1	5	5	25	75	100
	Part-III Allied Subject						
18UMCA31	Programming in C ++	1	4	3	25	75	100
18UMCAP2	Programming in C ++ - Lab	1	2	1	40	60	100
18UMCN31	**Part –IV Non Major Elective** Arithmetic and Mental Ability - I	1	2	2	25	75	100
	Total	**7**	**30**	**22**	**190**	**510**	**700**

SEMESTER- IV							
18UTAG41	**Part –I Tamil** பழந்தமிழ் இலக்கியமும் புதினமும்	1	6	3	25	75	100
18UENG41	**Part –II English** Exploring Language Through Literature-IV	1	6	3	25	75	100
	Part –III Core Subjects						
18UMCC41	Analytical Geometry 3D and Vector Calculus	1	5	5	25	75	100
18UMCC42	Statistics - I	1	5	5	25	75	100
18UMCA41	**Part-III Allied Subject** Python Programming	1	6	4	25	75	100
18UMCN41	**Part –IV Non Major Elective** Arithmetic and Mental Ability - II	1	2	2	25	75	100
18UEAG40-18UEAG49	**Part V- Extension Activities**	1	-	1	100	-	100
	Total	**7**	**30**	**23**	**250**	**450**	**700**

SEMESTER –V

Course code	Name of the course	No. of Courses	Hours / week	Credits	Maximum Marks		
					Int	Ext	Total
	Part –III Core Subject						
18UMCC51	Real Analysis	1	5	5	25	75	100
18UMCC52	Modern Algebra	1	6	5	25	75	100
18UMCC53	Numerical Analysis	1	5	5	25	75	100
18UMCC54	Statistics II	1	6	5	25	75	100
18UMCE51 18UMCE52 18UMCE53	Differential Equations Fuzzy sets Web Programming	**1**	**6**	**5**	**25**	**75**	**100**
18UMCS51	**Part IV Skill Subject** Laplace Transforms & Fourier Series	1	2	2	25	75	100
	Total	**6**	**30**	**27**	**150**	**450**	**600**

SEMESTER –VI

Course code	Name of the subject	No. of Courses	Hours / week	Credits	Maximum Marks		
					Int	Ext	Total
	Part –III Core Subject						
18UMCC61	Complex Analysis	1	5	5	25	75	100
18UMCC62	Linear Algebra	1	5	5	25	75	100
18UMCC63	Operations Research	1	6	5	25	75	100
18UMCPR1	Project & Viva-voce	1	6	5	40	60	100
18UMCE61 18UMCE62 18UMCE63	Graph Theory Stochastic Process Number Theory	**1**	**6**	**5**	**25**	**75**	**100**
18UMCS61	**Part IV Skill Subject** Boolean Algebra & Logic	1	2	2	25	75	100
	Total	**6**	**30**	**27**	**165**	**435**	**600**

MANNAR THIRUMALAI NAICKER COLLEGE (Autonomous)
DEPARTMENT OF MATHEMATICS WITH CA
(For those who joined in 2018-2019 and after)

Programme	**: B.Sc (Mathematics with CA)**	**Part III**	**: Core**
Semester	**: I**	**Hours**	**: 06**
Sub code	**: 18UMCC11**	**Credits**	**: 04**

DIFFERENTIAL CALCULUS

Course Outcomes

CO1. To develop problem solving skills
CO2. To familiarize the applications of differential calculus.
CO3. To explain about the nature and types of differential calculus.
CO4. To provides the capability of solving the Mathematical problems on skill development.

Unit -I:

Successive differentiation - n^{th} derivative – Standard results – Trigonometrical transformation – Formation of equations involving derivatives – Leibnitz formula.

Unit - II:

Maxima and Minima of two variables – Lagrange's method of undetermined multipliers - Equations of tangent and normal at any point of the curve.

Unit - III:

Angle of intersection of curves – Sub tangent and Sub Normal - Curvature – Circle, radius and centre of curvatures - Cartesian formula for radius of curvature – The coordinates of the centre of curvature.

Unit - IV:

Envelopes - Evolute and involute – Radius of curvature in Polar co-ordinates- p-r equation – Pedal equation of curves .

Unit -V:

Meaning of the derivative – Geometrical interpretation – Meaning of the sign of the differential coefficient – rate of change of variable.

Text Book:

1. T.K.Manickavashagam Pillai and S.Narayanan, **Calculus, Volume I**,

S.Viswanathan Publishers, Chennai, 1996.

Unit-I	–	Chapter 3, Sections: 1.1,1.2,1.3,1.4, 1.5 , 1.6, 2.1
Unit-II	–	Chapter 8, Sections: 4, 5
		Chapter 9, Sections : 1.2, 1.3,

Unit–III	–	Chapter 9, Section: 1.4, Section 2,
		Chapter 10, Sections : 2.1, 2.2, 2.3, 2.4.
Unit-IV	–	Chapter 10, Sections : 1.1,1.2,1.3, 1.4, 2.5, 2.6, 2.7.
Unit- V	–	Chapter 4, Sections : 1, 2, 3.

Reference Books:

1. S.Arumugam and Isaac**, Calculus,** New Gamma Publishing House, Palayamkottai,2008.
2. Shanthi Narayan, **Differential Calculus**, S.Chand & Company Ltd , New Delhi,1979.
3. George B.Thomas, **Thomas' Calculus,** Maurice D.Weir and Joel Hass, Pearson Education Company, 12th Edition, 2015.

MANNAR THIRUMALAI NAICKER COLLEGE (Autonomous)
DEPARTMENT OF MATHEMATICS WITH CA
(For those who joined in 2018-2019 and after)

Programme	**:B.Sc (Mathematics with CA)**	**Part III**	**: Allied**
Semester	**: I**	**Hours**	**: 4+2(lab)**
Subject Code	**: 18UMCA11**	**Credits**	**: 4**

INTRODUCTION TO MS-OFFICE

Course Outcomes:

CO1: Students should have an overall idea about MS Office, screen capture, ethical and legal issues, and different technologies.

CO2: The instructional parameters have been set for this course by this goal statement. However, the goal is broad.

CO3: This course will allow the students to become productive by acquiring a basic understanding of Microsoft Word, Microsoft Excel, Microsoft PowerPoint, and Microsoft Outlook.

CO4: This course will provide the student with good opportunities in desktop publishing job.

Unit –I:

Introduction to Computers –Basic Anatomy Of Computers Basic:Types of Computers-Components And Functions-Input/output Devices-External Storage Devices.

Unit – II:

Introduction to Word-Word Processing-Starting A Word-Editing A Document – Move and Copy Text-Formatting Text and Paragraph-Finding andReplacing Spelling, Grammar and Auto Correct-Using Tabs & Insert setting.

Unit III:

Enhancing a Document-Toolbars-Columns, Tables and Other Formatting Features using Graphics, Templates and Wizards-Using Mail merge-Miscellaneous Features of Word

Unit IV:

Introduction To Worksheet And Excel-Getting Started With Excel-Editing Cells, Using Commands And Functions: Moving, Copying, Inserting And Deleting Rows And Columns-Printing The Workbook-Creating Charts-Using Date, Time And Addressing Modes-Naming Ranges And Built In Functions.

Unit V:

Database in a worksheet –Formatting Commands and drawing toolbar-Miscellaneous Commands And Functions-Multiple Workbooks, Pivot Table, Macros And Hyperlinks – Overview Of PowerPoint – Creating A Presentation – PowerPoint Views – Running A Slideshow.

Text Book:

R.K.Taxali, **PC Software for windows 98** Made Simple, Tata McGraw Hill Publishing Company Ltd, New Delhi 2012.

Unit I : Chapter 1 (Full)

Unit II : Chapters 9 to 14 (Full)

UnitIII : Chapters 15 to19 (Full)

Unit IV : Chapters 20 to 28 (Full)

Unit V : Chapters 29 to 32 (Full)

Reference Books:

1. Sanjay Saxena, **A First Course in Computers**, Vikas Publishing House Pvt. Ltd, New Delhi 2003

2. Ron Mansfield, **Working In Microsoft Office,** Tata Mcgraw-HillEdition , New Delhi 2008.

INTRODUCTION TO MS-OFFICE PACKAGES- LAB (Practice Only):

List of Programs:

1. Design a document with at least two pages using MS word with different font style, different font sizes, header and footer, with page number.
2. Design an invitation with two column break, use word to insert picture, design border and shading.
3. Create a main document and database of addresses and merge them using Mail-merge tools.
4. Create a daily attendance sheet of a class room for a week with heading, day, period etc.
5. Create students mark list for three subjects and to list the result and rank by using string function and logical function.
6. Create a yearly budget of a company and create different types of chart for the data.
7. Create a slide show using blank representation with at least 20 slides.
8. Present the college details or any publishing work using Auto content wizard.
9. Create a Seminar presentation using insert picture and sound.

MANNAR THIRUMALAI NAICKER COLLEGE (Autonomous)
DEPARTMENT OF MATHEMATICS WITH CA
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Programme	**: B.Sc (Mathematics with CA)**	**Part IV**	**: Skill**
Semester	**: I**	**Hours**	**: 02**
Sub code	**: 18UMCS11**	**Credits**	**: 02**

NUMERICAL APTITUDE

Course Outcomes:

CO1: To introduce concepts of Mathematics along with analytical ability.
CO2: To develop the computational skills needed.
CO3: To improve the ability to face the competitive examinations.
CO4: To face the Competitive Examination bravely in future on employability.

Unit -I:
Problems on ages.
Unit -II:
Profit and Loss
Unit - III:
Ratio and proportion.
Unit -IV:
Time and Work.
Unit- V:
Permutations and Combinations.

Text Book:

1. R.S.Aggarwal, **Quantitative Aptitude,** Revised and Enlarged Edition, S.Chand publication, New Delhi, Reprint 2009.

Unit I: Chapter 8- Examples and Exercise (first ten problems)
Unit II: Chapter 11 (Examples and Exercise first ten problems)
Unit III: Chapter 12 (Examples and Exercise first ten problems)
Unit IV: Chapters 15 (Examples and Exercise first ten problems)
Unit V: Chapters 30 (Examples and Exercise first ten problems).

Reference Books:

1. Abhigit Guha, **Quantitative Aptitude**, 4th Edition, Tata Mc Graw Hill Publication, New Delhi, 2011.
2. U.Mohan Rao, **Quanlitative Aptitude,** Scitech Publications, Chennai, Reprint 2013.

MANNAR THIRUMALAI NAICKER COLLEGE (Autonomous)
DEPARTMENT OF MATHEMATICS WITH CA
(For those who joined in 2018-2019 and after)

Programme	**: B.Sc (Mathematics with CA)**	**Part IV**	**: Skill**
Semester	**: I**	**Hours**	**: 02**
Sub code	**: 18UMCS12**	**Credits**	**: 02**

TRIGONOMETRY

Course Outcomes:

- **CO1**. To familiarize the trigonometrical function
- **CO2.** To develop the capability of finding standard expansions of Trigonometric function.
- **CO3.** To introduce the various types of hyperbolic functions and its inverse.
- **CO4.** To mold the students on skill development.

Unit- I

De Moivre's theorem for rational number.

Unit - II

Expression for Trigonometrical functions - $\sin n\theta$, $\cos n\theta$, $\tan n\theta$.

Unit - III

Expression for $\sin^n\theta$, $\cos^n\theta$ and Expression of $\sin\theta$, $\cos\theta$, $\tan\theta$ in powers of θ.

Unit - IV

Hyperbolic functions

Unit - V

Inverse hyperbolic functions

Text Book:

1.Dr.S.Arumugam, Isaac and Somasundaram, **Trigonometry and Fourier series**, New Gamma Publishing House, Tirunelveli, 1999.

Unit I : Section 1.1
Unit II : Section 1.2
Unit III : Section 1.3 & 1.4
Unit IV : Section 2.1
Unit V : Section 2.2

Reference Books :

1. S. Narayanan and T.K. Manicavachagom Pillai, S. Viswanathan, **Trigonometry (Printers & Publishers) Pvt. Ltd, (1997)**
2. S.L.Loney, **Plane Trigonometry-Part-I&II**(6^{th}Edition), Arihant Publications, 2016.

MANNAR THIRUMALAI NAICKER COLLEGE(Autonomous)
DEPARTMENT OF MATHEMATICS WITH CA
(For those who joined in 2018-2019 and after)

Programme	**: B.Sc (Mathematics with CA)**	**Part IV**	**: Mandatory**
Semester	**: I**	**Hours**	**: 02**
Sub code	**:18UEVG11**	**Credits**	**: 02**

ENVIRONMENTAL STUDIES

COURSE OUTCOMES		
CO1: To gain knowledge on the importance of environmental education and ecosystem. **CO2**:To acquire knowledge about environmental pollution- sources, effects and control measures of environmental pollution **CO3:**To understand the various energy sources, exploitation and need of alternate energy resources. Disaster management To acquire knowledge with respect to biodiversity, its threats and its conservation and appreciate the concept of interdependence **CO4:** To make the student to understand the various pollution problems control mechanisms.		
UNIT I	**:**	**Environment and Earth:** Environment – Meaning – Definition - Components of Environment – Types of Environment. Interference of man with the Environment. Need for Environmental Education. Earth – Formation and Evolution of Earth– Structure of Earth and its components – Atmosphere, Lithosphere, Hydrosphere and Biosphere. **Natural Resources:** Renewable Resources and Non-Renewable Resources. Natural Resources and Associated Problems. Use and Exploitation of Forest, Water, Mineral, Food, Land and Energy Resources.
UNIT II	**:**	**Ecology and Ecosystems:** Ecology – Meaning - Definition – Scope – Objectives – Subdivisions of Ecology. **Ecosystem**–Concept - Structure - Functions – Energy Flow – Food Chain and Food Web – Examples of Ecosystems (Forest, Grassland, Desert, Aquatic).
UNIT III	**:**	**Biodiversity:** Definition – Biodiversity at Global, National and Local Level. Values of Biodiversity – Threats to Biodiversity – Conservation of Biodiversity. **Biodiversity of India:**Biogeographical Distribution – Hotspots of Indian Biodiversity – National Biodiversity Conservation Board and Its functions. Endangered and Endemic Species of India
UNIT IV	**:**	**Pollution Issues:** Definition – Causes – Effects and Control Measures of Air, Water, Soil, Marine, Noise, Thermal and Nuclear Pollutions. **Global Issues:** Global Warming and Ozone Layer Depletion. Future plans of Global Environmental Protection Organisations.
UNIT V	**:**	**Sustainable Development:**Key aspects of Sustainable Development – Strategies for Sustainable Development - Agriculture – Organic farming – Irrigation – Water Harvesting – Water Recycling – Cyber Waste and Management. **Disaster Management:** Meaning – Types of Disasters - Flood and Drought – Earth quake and Tsunami – Landslides and Avalanches – Cyclones and Hurricanes – Preventions and Consequences. Management of Disasters -

Text Book:

Study Material for **Environmental Studies**, Mannar Thirumalai Naicker College, Pasumalai, Madurai – 625 004.

Reference Books:

1. Study Material for **Environmental Studies**, Publications Division, Madurai Kamaraj University, Madurai – 625 021.
2. R.C. Sharma and Gurbir Sangha, **Environmental Studies**, Kalyani Publishers, 1, Mahalakshmi Street, T.Nagar, Chennai – 600 017.
3. Radha, **Environmental Studies for Undergraduate Courses of all Branches of Higher Education, (Based on UGC Syllabus),** Prasanna Publishers & Distributors, Old No. 20, Krishnappa Street, (Near Santhosh Mahal), Chepak, Chennai – 600 005.
4. S.N.Tripathy and Sunakar Panda, **Fundamentals of Environmental Studies**, Vrinda Publications (P) Ltd. B-5, Ashish Complex, (opp. To Ahicon Public School), MayurVihar, Phase-1, Delhi– 110 091.
5. G.Rajah,**Environmental Studies** for All UG Courses, (Based on UGC Syllabus), Margham Publications, 24, Rameswaram Road, T.Nagar, Chennai – 600 017.

MANNAR THIRUMALAI NAICKER COLLEGE(Autonomous)
DEPARTMENT OF MATHEMATICS WITH CA
(For those who joined in 2018-2019 and after)

Programme	**: B.Sc (Mathematics with CA)**	**Part III**	**: Core**
Semester	**: II**	**Hours**	**: 06**
Sub code	**: 18UMCC21**	**Credits**	**: 05**

THEORY OF EQUATIONS AND ITS APPLICATIONS

Course Outcomes

CO1 To familiarize with the theory of equations.
CO2 To introduce the transformation of equations.
CO3 To add the information about trigonometric and hyperbolic functions.
CO4. To develop the basic knowledge of application on mathematics.

Unit - I:

Theory of equations – Imaginary roots - Rational roots – Relation between the roots and coefficients – Symmetric functions of the roots.

Unit - II:

Sum of the power of the roots of an equation – Newton's theorem – Transformations of equations – Roots Multiplied by a given number.

Unit - III:

Reciprocal roots – Reciprocal equations- standard forms to increase and decrease the roots of a given equations by a given quantity.

Unit - IV:

Removal of terms – Descarte's rule of sign – Roll's theorem (only statement) – Multiple roots- Strum's theorem (only problems) – General solution of cubic equations – Cardon's method.

Unit - V:

Approximate solutions of Numerical equations- Newton's method – Horner's method.

Text book:

1. S. Arumugam and Isaac, **Classical Algebra and Theory of Equations,** New Gamma Publishing House, Palayamkottai, 2016.

Unit I : Page No: 08 – 31
Unit II : Page No: 32 – 41 & 56 – 60
Unit III : Page No: 42 – 56 & 60 – 74
Unit IV : Page No: 74 – 100
Unit V : Page No: 103 – 112

Reference books:

1. T.K .ManicavasagamPillai and S.Narayanan, **Algebra – Volume I,** S.Viswanathan Printers Publishers Pvt. Ltd, Chennai, 2007.

MANNAR THIRUMALAI NAICKER COLLEGE(Autonomous)

DEPARTMENT OF MATHEMATICS WITH CA
(For those who joined in 2018-2019 and after)

Programme	**: B.Sc., Mathematics (CA)**	**PartIII**	**: Allied**
Semester	**: II**	**Hours**	**: 04**
Subject Code	**:18UMCA21**	**Credits**	**:03**

PROGRAMMING IN C

Course Outcomes:

CO1: To know about the fundamentals and basics of C language.

CO2: To impart the knowledge about pointers which is the backbone of effective memory handling.

CO3: To study the advantages of user defined data type which provides flexibility for application development.

CO4: This course provide the student to built the basic programming skills.

Unit - I :OVERVIEW OF C

History of C – Importance of C – Basic Structure of C – Programming Style – Constants, Variables and Data Types – Declaration of Variables, Storage Class – Defining Symbolic Constants –Operators and Expressions - Type Conversions in Expression – Operator Precedence and Associativity – Mathematical Functions – Managing I/O Operations: Reading and Writing a Character – Formatted Input and Output.

Unit-II :DECISION MAKING AND BRANCHING

If Statement, If…. Else Statement – Nesting If Statement – Else If Ladder – Switch Statement – The (?Operator – Go To Statement. The While Statement – Do while Statement – The For Statement.

Unit - III: ARRAYS

One Dimensional Array – Declaration, Initialization – Two Dimensional Array – Multi Dimensional Array – Dynamic Array – Initialization. Strings -Declaration, Initialization of String Variables – Reading and Writing Strings – Arithmetic Operations on Strings – Putting Strings together – Comparison – String Handling Functions – Table of Strings – Features of String.

Unit - IV: USER DEFINED FUNCTIONS

Definition – Return values and their Types – Function Calls, Declaration, Category – All Types of arguments and return values – Nesting of Functions – Recursion – Passing Arrays, Strings to Functions - Structures and Unions - Defining a Structure – Declaring Structure Variables – Accessing Structure Members – Initialization - Arrays of Structures – Arrays within Structures – Structures within Structures – Structures and Functions – Unions – Sizeof Structures.

Unit - V: POINTERS

Accessing the Address of a Variable – Declaring, Initializationof Pointer Variables – Accessing a variable through its Pointer –Pointers and Arrays – Pointers and Character Strings – Array of Pointers – Pointers as Function arguments – Function Returning Pointers – Pointers to Functions – Pointers and Structures.

Text Book:

1. E.Balagurusamy, **Programming in ANSI C**, sixth Edition, Tata McGraw Hill Publishing Company,Uttar Pradesh, 2005.
   UNIT – I : Chapters 1, 2, 3 and 4(Full)
   UNIT – II : Chapters 5 and 6 (Full)
   UNIT – III : Chapters 7and 8 (Full)
   UNIT – IV : Chapters 9 and 10 (Full)
   UNIT – V : Chapters 11 (Full)

Reference Books:

1. Byron Gottfried, **Programming with C**, Tata McGraw Hill, New Delhi, 2011.
2. YashavantKanethkar ,**Let us C,** BPB Publications, New Delhi , Jan 2010.

MANNAR THIRUMALAI NAICKER COLLEGE(Autonomous)
DEPARTMENT OF MATHEMATICS WITH CA
(For those who joined in 2018-2019 and after)

Programme	**: B.Sc., Mathematics (CA)**	**PartIII**	**: Allied**
Semester	**: II**	**Hours**	**: 02**
Subject Code	**:18UMCAP1**	**Credits**	**: 01**

PROGRAMMING IN C Lab

Course Outcomes:

CO1: The purpose of this course is to introduce to students to the field of programming using C language.
CO2: The students will be able to enhance their analyzing and problem solving skills and use the same for writing programs in C language.
CO3: Implement Programs with pointers and arrays, perform pointer arithmetic, and use the pre-processor.
CO4: This course provide the student to built the basic programming skills.

List of Practical's

1. Fahrenheit to Celsius conversion

2. Simple interest and Compound interest

3. Largest of three numbers

4. Odd/Even Number checking

5. Reverse the Number

6. Sum of Digits

7. Number of Multiples of 9 between 1 and 100

8. Prime Number

9. Quadratic Equation using switch case

10. Fibbonacci Series

11. Average of n values

12. nCr value

13. Multiplication table

14. Standard deviation

15. Median

16. Ascending/Descending order

17. Descending order

18. Sorting a list of Names / Arranging strings in Alphabetical order

19. Matrix addition and subtraction using printers

20. Matrix multiplication/ Las cycle based on pointer and structure

Text Book:

1.Dr S. Ramaswamy and P.Radhaganesan, **Programming in C**, sixth Edition, Scitech Publications India PvtLtd,Chennai -17

Reference Books:

1. Byron Gottfried, **Programming with C**, Tata McGraw Hill, New Delhi, 2011.
2.YashavantKanethkar ,**Let us C,** BPB Publications, New Delhi , Jan 2010.

MANNAR THIRUMALAI NAICKER COLLEGE(Autonomous)
DEPARTMENT OF MATHEMATICS WITH CA
(For those who joined in 2018-2019 and after)

Programme	**: B.Sc., Mathematics (CA)**	**Part IV**	**: Skill**
Semester	**: II**	**Hours**	**:02**
Subject Code	**:18UMCS21**	**Credits**	**:02**

LINUX OPERATING SYSTEM

Course Outcomes:

CO1: The objective of the course is to equip students with computing skills in a scientific environment. Open source software will be largely utilized within the Linux Operating System.
CO2: Documentation will demonstrate good organization and readability
CO3: File processing project will require data organization, problem solving and research.
CO4: This course provides the student to built the basic programming skills.

UNIT I

Introducing Linux: Defining an Operating System – Operating System Functions – Commonly Used Operating Systems – The Linux Software License – How Linux is Developed – Linux Distributions – Version Numbering – The Motivation of Free Software Developers.

UNIT II

Installing Linux: Understanding Installation Issues -- Running a Linux System -- Starting Linux.

UNIT III

The SHELL and TEXT Files: The Shell prompt – Functions of a Shell – Different types of Shells – Entering Commands – The Start up – Process – Using Aliases – Environment Variables – Variety of Editors – Using vi Editors – Markup Languages – Controlling Fonts – Altering Text Files.

UNIT IV

Role of the System Administrator: Working as a System Administrator – Principles of Linux System – Basic System Administration Tools.

UNIT V

Basic Administration Tasks: Administering User Accounts - Maintaining File Systems – Simple Task Management. Creating Script and Automated Procedures: Writing Shell Scripts.

TEXT BOOKS:

Nicholas Wells, **Linux Installation and Administration**, Vikas Publishing, Ist Edition, New Delhi, 2001.

Reference Books:

1. Linux Command Line and Shell Scripting Bible, 2nd Edition, by Richard Blum and Christine Bresnahan.
2. Beginning the Linux Command Line, 2nd Edition, by Sander Van Vugt.
3. A practical Guide to Linux Command, Editors and Shell Programming by Mark G. Sobell, 4thEdition,

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DEPARTMENT OF MATHEMATICS WITH CA
(For those who joined in 2018-2019 and after)

Programme	**: B.Sc., Mathematics (CA)**	**Part IV**	**: Skill**
Semester	**: II**	**Hours**	**: 02**
Subject Code	**:18UMCSP1**	**Credits**	**: 02**

SHELL PROGRAMMING Lab

Course Outcomes:

CO1: To enable the student setup users and groups, Configure user defaults, logins and user profiles.
CO2: To understand the open source concept like Linux commands.
CO3: To understand the concepts of cheking File or Directory in Linux.
CO4: This course provide the student to built the basic programming skills.

1. Basic Commands in Linux.
2. Number Checking in Linux
3. Multiplication Table in Linux.
4. Roman Letter Conversion in Linux.
5. Checking File or Directory in Linux.
6. File Operations in Linux.
    - Create
    - Copy
    - Delete
    - Rename
7. Directory Operations in Linux
    - Create
    - Remove
    - Toggle
8. Directory Operations in Linux
    - Copy
    - Move
9. Listing the files regarding their names in Linux.
10. Changing the access rights in Linux.
11. Counting number of lines, words and characters in a file in Linux
12. Fibonacci series in shell scripting.
13. Odd or even in shell scripting.

TEXT BOOKS:

Nicholas Wells, **Linux Installation and Administratoin**, Vikas Publishing, Ist Edition, New Delhi, 2001.

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DEPARTMENT OF MATHEMATICS WITH CA
(For those who joined in 2018-2019 and after)

Programme	**: B.Sc., Mathematics (CA)**	**Part IV**	**: Mandatory**
Semester	**: II**	**Hours**	**: 02**
Subject Code	**: 18UVLG21**	**Credits**	**:02**

VALUE EDUCATION

COURSEOUTCOMES		
CO1: Clarifying the meaning and concept of value - value education.		
CO2: To inspire **students** to develop their personality and social **values** based on the principles of human **values.**		
CO3: Developing sense of Love, Peace and Brotherhood at Local, national and international levels.		
CO4: To enable the students to understand the social realities and to inculcate an essential value system towards building a health society		
UNIT I	**:**	**Values and The Individual:** Values – Meaning – Definition – Importance – Classification of Values, Value Education – Meaning – Need for Value Education. Values and the Individual – Self-Discipline – Meaning – Tips to Improve Self-Discipline. Self-Confidence – Meaning - Tips to Improve Self-Confidence. Empathy – Meaning – Role of Empathy in motivating Values. Compassion – Role of Compassion in motivating Values. Forgiveness – Meaning - Role of Forgiveness in motivating Values. Honesty – Meaning – Role of Honesty in motivating Values. Courage – Meaning – Role of Courage in motivating Values.
UNIT II	**:**	**Religions and Communal Harmony:** Religions – Meaning **–** Major Religions in India - Hinduism – Values in Hinduism. Christianity – Values in Christianity. Islam – Values in Islam. Buddhism – Values in Buddhism. Jainism – Values in Jainism. Sikhism – Values in Sikhism. Need for Religious Harmony in India. Caste System in India – Need for Communal Harmony in India. Social Justice – Meaning – Factors Responsible for Social Justice.
UNIT III	**:**	**Society and Social Issues:** Society – Meaning – Values in Indian Society. Democracy – Meaning – Values in Indian Democracy. Secularism – Meaning – Values in Indian Secularism. Socialism – meaning – Values in Socialism. Social Issues – Alcoholism – Drugs – Poverty – Unemployment.

UNIT IV	:	**Human Rights and Marginalised People:** Human Rights – Meaning – Problem of Violation of Human Rights in India – Authorities available under the Protection of Human Rights Act in India. Marginalised People like Women, Children, Dalits, Minorities, Physically Challenged – Concept – Rights – Challenges. Transgender – Meaning – Issues.
UNIT V	:	**Social Institutions in Value Formation:** Social Institutions – Meaning – Important Social Institutions. Family – Meaning – Role of Families in Value Formation. Role of Press & Mass Media in Value Formation – Role of Social Activists – Meaning Contribution to Society – Challenges.

Text Book:

Text Module for **Value Education**, Mannar Thirumalai Naicker College, Pasumalai, Madurai – 625 004

Reference Books:

1. Text Module for **Value Education**, Publications Division, Madurai Kamaraj University, Madurai – 625 021.
2. N.S.Raghunathan, **Value Education**, Margham Publications, 24, Rameswaram Road, T.Ngar, Chennai – 600 017.
3. Dr.P.Saravanan, and P.Andichamy, **Value Education**, Merit India Publications, (Educational Publishers), 5, Pudumandapam, Madurai-625001.