

Qualification for Admission

Candidate should have passed the Higher Secondary Examination conducted by the Board of Higher Secondary Education, Government of Tamil Nadu with Physics as one of the subject 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 question paper (External Examination)

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

The question paper may have 3 parts.

Duration of the external examination is 3 hours

Part –A

Five questions (answer all) 5 x 02 = 10 Marks
 (One question from each Unit)

Part –B

Five questions (‘either or ‘ type) 5 x 07 = 35 Marks
 (One question from each Unit)

Part –C

Three questions out of five 3 x 10 =30 Marks
 (One question from each Unit)

Total -----
75 Marks

Question paper pattern

(for part IV – Environmental Studies and Value Education only)

Part –A

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

Part –B

Three questions out of Five 3 x 15 = 45 marks

Total 75 marks

Note: No unit shall be omitted ;not more than two question from each unit

Pattern of the Question paper (Internal)

Part –A

Five questions (answer all) 5 x 02=10 Marks

Part –B

Two questions (‘either or ‘ type) 2 x 05=10 Marks

Part –C

One questions out of two 1 x 10 =10 Marks

Total 30 Marks

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

Part –A

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

Part –B

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

Total 30 Marks

Minimum Marks for a Pass

1. 40% of the aggregate (Internal +External Examinations).
2. No separate pass minimum for the Internal Examinations.
3. 27 marks out of 75 is the pass minimum for the External Examinations.

PROGRAMME SPECIFIC OUTCOMES

PSO1: Gives in-depth ideas and Description of atomic structure, Nuclear Reactor, Materials function, types of spectrum, medical equipments

PSO2: Covers concepts, definitions, properties of matter, Electricity, Electromagnetism, optics, atomic physics, Nuclear Physics, Digital Electronics, Material Science.

PSO3: Helps the students to analyze the circuit models and to design the circuit.

PSO4: Helps the students to solve the theoretical problems

MANNAR THIRUMALAI NAICKER COLLEGE (Autonomous)

B.Sc (Physics)

**Table: I: Course pattern
(Those Who Joined in 2015-2016 and after)**

Study Component	I Sem	II Sem	III Sem	IV Sem	V Sem	VI Sem	Total Hours	Total Credits	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	4(4)	4(4)	4(4)	4(4)	5(5) 5(5) 4(4)	5(5) 5(5) 4(4)	44	44	10	1000
Core Subject(P)	2(0)	2(2)	2(0)	2(2)	2(0) 3(0) 3(0)	2(5) 3(5) 3(5)	24	19	5	500
Allied Subject - I	6(4)	3(2) 3(2)	4(4)	2(2) 2(2)	-	-	20	16	6	600
Allied Subject – I (T)	4(4)	4(3)	4(4)	4(3)			24	16	6	600
Allied Subject – I (P)	2(0)	2(1)	2(0)	2(1)						
Allied Subject - II (T)			4(4)	4(3)	4(4)	4(3)	24	16	6	600
Allied Subject - II (P)			2(0)	2(1)	2(0)	2(1)				
Part – IV										
Skill Based Subject	2(2) 2(2)	2(2) 2(2)			2(2)	2(2)	12	12	6	600
Non Major Elective			2(2)	2(2)			4	4	2	200
EVS/ Value Education	2(2)	2(2)					4	4	2	200
Part – V										
Extension activities				0(1)			0	1	1	100
Total	30 (20)	30 (22)	30 (20)	30 (23)	30 (20)	30 (35)	180	140	46	4600

MANNAR THIRUMALAI NAICKER COLLEGE (AUTONOMOUS), MADURAI – 4
(Re-Accredited with ‘A’ Grade by NAAC)

CHOICE BASED CREDIT SYSTEM

B.Sc (Physics)

COURSE STRUCTURE

(W.e.f. 2015-2016 batch onwards)

SEMESTER – I								
Subject Code	Subjects	No. Of Courses	Hours/ Week	Credits	Maximum Marks			
					Int	Ex t	Tot	
15UTAG11	Tamil I: Ikkala Kavithaiyum Sirukathaiyum	1	6	3	25	75	100	
15UENG11	English I: Language Through Literature –I	1	6	3	25	75	100	
15UPHC11	Mechanics and Relativity	1	4	4	25	75	100	
15UPHA11	Allied Mathematics - I	1	6	4	25	75	100	
15UMTA11	Allied Physics – I Mechanics, Properties of Matter	1	4	4	25	75	100	For B.Sc Maths Students
---	Allied Physics Practical	1	2	-	-	-	-	
15UPHS11	Properties of Matter	1	2	2	25	75	100	
15UPHS12	Programming in C - I	1	2	2	25	75	100	
15UVEG11	Environmental Studies	1	2	2	25	75	100	
---	Major Physics Practical	1	2	-	-	-	-	
	TOTAL	8	30	20	--	--	700	

SEMESTER – II									
Subject Code	Subjects	No. Of Courses	Hours/ Week	Credits	Maximum Marks				
					Int	Ext	Tot		
15UTAG21	Tamil II: Idaikkala Ilakkiyamum Puthinamum	1	6	3	25	75	100		
15UENG21	English II: Language Through Literature – II	1	6	3	25	75	100		
15UPHC21	Electricity and Electromagnetism	1	4	4	25	75	100		
15UPHA21	Allied Mathematics - II	1	3	2	25	75	100		
15UPHA22	Allied Mathematics – III	1	3	2	25	75	100		
15UMTA21	AlliedPhysics – II Thermal Physics and Sound	1	4	4	25	75	100		For B.Sc Maths Students
-----	AlliedPhysics Practical	1	2	1	40	60	100		
15UPHS21	Thermal Physics	1	2	2	25	75	100		
15UPHS22	Programming in C - II	1	2	2	25	75	100		
15UVLG21	Value Education	1	2	2	25	75	100		
15UPHCP1	Major Physics Practical	1	2	2	40	60	100		
	TOTAL	9	30	22	--	--	900		

MANNAR THIRUMALAI NAICKER COLLEGE (Autonomous)**DEPARTMENT OF PHYSICS****Course Structure – Semester wise CBCS (w.e.f. 2015 – 2016)**

Class : B.Sc (Physics)
Semester : I
Subject Code : 15UPHC11



Part III : Core
Hours : 04
Credits : 04

MECHANICS AND RELATIVITY**Course Outcomes:**

CO1 To enable the students to understand the basic concepts of mechanics.

CO2 To study the relativity before Einstein

CO3 To understand the special theory and relativity

Unit - I:

Newton's laws of motion - Momentum and impulse – Law of conservation of linear momentum – Collision – Elastic and Inelastic collisions – Direct impact of two moving smooth spheres – Loss of Kinetic energy due to direct impact - Oblique impact of two moving smooth sphere – Loss of kinetic energy due to oblique impact.

Unit -II:

Moment of inertia of a circular disc and solid sphere about an axis passing through its centre and perpendicular to its own axis –Torque and Angular momentum – Relation between angular momentum and torque – Kinetic energy of rotation – Expression for the acceleration of a body rolling down in an inclined plane.

Unit -III:

Satellites – Orbital velocity – Escape velocity - Jet plane – Rockets – Principle – Theory of rocket – Velocity of rocket at any instant – Rocket propulsion systems – Specific impulse – Multistage rocket – Shape of the rocket.

Unit –IV:

Frames of reference – Inertial Frames of reference – Galilean Transformation, Newtonian relativity – Michelson – Morley Experiment – Significance of negative result. Postulates of special theory of relativity – Lorentz Transformation – Lorentz Fitzgerald contraction – Time dilation

Unit – V:

Relativistic addition of velocities-Relativity of simultaneity - Relativistic mass, Relativistic momentum –Einstein's mass-energy relation – Relation between total energy, rest mass energy and momentum.

Text Book:

1. R. Murugesan , **Mechanics and Relativity**, Properties of Matter, Practical Physics, First Edition,
Madurai, August 2006 [B.Sc. Major Physics].
Unit – I : Page No. 90, 91, 99-105, 107-109
Unit – II : Page No.115, 117, 120, 125, 126, 130 – 132
Unit – III : Page No.69 – Page No.80
Unit – IV : Page No., 17 - Page No., 22, Page No 30 - 37
Unit – V : Page No.37 – Page No.56

Reference Books:

1. S.L.Kakani, C. Hemrajani, S. Kakani , **Mechanics**, III Edition,Viva Books Pvt Ltd, NewDelhi, 2011.
2. D.Halliday Resnick, Jearl Walker, **Principles of Physics**, 9th Edition, Wiley India Pvt Ltd, New Delhi, 2012.
3. D.S. Mathur , **Machanics** , S. Chand and Co. Publications, New Delhi, 2002.
4. Narayanmoorthy, **Mechanics Part I and II** , National Publishing Company, 6th Edition, New Delhi, 2001.

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MANNAR THIRUMALAI NAICKER COLLEGE (Autonomous)
DEPARTMENT OF PHYSICS
Course Structure – Semester wise CBCS (w.e.f. 2015 – 2016)

Class : B.Sc (Mathematics)
Semester : I
Sub code : 15UPHA11



Part III : Ancillary
Hours : 06
Credits : 04

ALLIED MATHEMATICS - I

Course Outcomes:

CO1 To familiarize with the theory of equations.

CO2 To introduce transformation of equations.

CO3 To teach trigonometric and hyperbolic functions

Unit - I Theory of Equation – An n^{th} degree equation has exactly n roots – Relation between the roots and the coefficients

Unit - II Finding the roots upto two decimals by Newton's method and Horner's Method

Unit -III Radius of curvature, Center of curvature of plane curves.

Unit - IV Integral calculus – Evaluation of Definite Integrals – Reduction formulae for $\sin^n x$, $\cos^n x$, $\tan^n x$, $\operatorname{cosec}^n x$, $\sin^m x \cos^n x$, and Simple problems.

Unit - V Trigonometry- Expansions – Hyperbolic functions.

Text Book:

1.S.Arumugam, **Ancillary Mathematics Volume I**, New Gamma Publication, 1999
 Reprint, Palayamkottai, 2006.

Unit I - Chapter 1: Page No 1 to 26

Unit II - Chapter 1: Page No 40 to 48

Unit III - Chapter 3: Page No 65 to 90

Unit IV - Chapter 3: Page No 91 to 130

Unit V - Chapter 4: Page No143 -153 & 162-180

Reference Books :

1. T.K .Manickavashagam Pillai and S.Narayanan, **Algebra, Volume I and II**, S.Viswanthan Printers and Publishers Pvt Ltd, Chennai, 2009.
2. T.KManickavashagampillai and S.Narayanan, **Trigonometry**, S.Viswanthan Printers and Publishers Pvt Ltd, Chennai, 2009.

MANNAR THIRUMALAI NAICKER COLLEGE (Autonomous)

DEPARTMENT OF PHYSICS

Course Structure – Semester wise CBCS (w.e.f. 2015 – 2016)

Class : B.Sc (Physics)
Semester : I
Subject Code : 15UPHS11



Part IV : Skill based
Hours : 02
Credits : 02

PROPERTIES OF MATTER

COURSE OUTCOMES

CO1: To enable the students to understand the basic concepts of properties of matter (solids, liquids and Gases)

CO2: To understand the Elasticity, Kepler's laws of planetary motion and variation of 'g'.

CO3: To study surface tension and viscosity

Unit – I:

Elasticity – Stress, Strain – Poisson's ratio – Hooke's law – Young's modulus – Bending of beams – Bending moment – Uniform and Non-uniform bending – Theory.

Unit – II:

Kepler's laws of planetary motion – Newton's law of Gravitation – Mass and Density of the earth - Potential at a point inside and outside a spherical shell.

Unit – III:

Variation of 'g' with depth, altitude and latitude – Earth quake – Seismograph – Modern application of seismology.

Unit – IV:

Definition of Surface Tension – Angle of Contact – Excess of pressure in synclastic and anticlastic surface – Capillary rise.

Unit – V:

Viscosity – Coefficient of viscosity – Stream lined and Turbulent motion – Critical Velocity – Capillary flow – Bernoulli's theorem – Venturimeter – Pitot's tube.

Text Book:

1. R. Murugesan, **Mechanics, Properties of Matter and Sound**, Thermal Physics, Practical, 1st Edition, Madurai, July 1999 [B.Sc. Major Physics].
Unit – I : Page No.63– 65, 85-87, and 95-98
2. R. Murugesan, **Mechanics and Relativity, Properties of Matter**, Practical

Physics, First Edition, Madurai, August 2006 [B.Sc. Major Physics].

Unit – II: Page No.245 – 246, [Given as Printed document]

Unit – III: Page No.252 – 254 (Online Wikipedia)

Unit – IV: Page No., 169, 174 – 179, 189

Unit – V: Page No., 198 – 205, (Online Wikipedia)

Reference Books:

1. D.Halliday Resnick, Jearl Walker, **Principles of Physics**, 9th Edition, Wiley India Pvt Ltd, New Delhi, 2012.
2. D.S Mathur , **Elements of Properties of Matter**, S.Chand and Co, New Delhi, 2004.
3. Brijlal and N. Subrmanyam, **Properties of Matter**, S.Chand and Co, New Delhi, 2006.
4. D.Halliday Resnick, Jearl Walker, **Fundamental of Physics**, Wiley India Pvt Ltd., 6th Edition, New Delhi, 2012.

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MANNAR THIRUMALAI NAICKER COLLEGE (Autonomous)

DEPARTMENT OF PHYSICS

Course Structure – Semester wise CBCS (w.e.f. 2015 – 2016)

Class : B.Sc (Physics)
Semester : I
Subject Code : 15UPHS12



Part IV : Skill based
Hours : 02
Credits : 02

PROGRAMMING IN C- I

COURSE OUTCOMES:

CO1: To enable the students to understand the basic knowledge of programming in C.

CO2: Students can create and identify the solutions for problem solving methods with help of c programming

CO3: Students can understand the concept of functions.

Unit-I:

Introduction to C – Characters set, identifiers and keywords – Data types – Variables and constants – Various types of Operators – Arithmetic – Expression – Input and Output operations.

Unit-II:

Simple IF statement – simple IF, ELSE statement – Block IF statement – Block IF ELSE statement – the ELSE IF ladder statement – looping operation using while statement – FOR statement – Break statement – Continue statement – Switch statement - Goto statement – Exit function.

Unit-III:

Simple programs – To find the volume of sphere – To find the factorial of a number – To find the Fibonacci series – To evaluate $\sin x$ – To find the roots of a quadratic equation $ax^2+bx-c=0$.

Unit-IV:

Defining a function – Accessing a function – Category of function – Passing arguments to function – Recursion – Library functions – Storage class modifiers – Auto, Global, Static Register types – Simple programs.

Unit –V:

Using function to sort in the ascending and descending order of magnitude of a given set of number – Using function to sum integer values between 1-N recursion technique – To find binomial coefficient – To check whether a given number is odd or even – To sort names in a alphabetical.

Text Book:

1. E. Balagurusamy, **Programming in ANSI C (Fourth Edition)**, Tata McGraw Hill, Tenth Reprint, New Delhi, 2009.
Unit – I : Page No 1.1 - 1.3, 2.1 - 2.4 - 2.7, 3.1, 3.11, 4.1 - 4.5
Unit – II : Page No 5.1 - 5.8, 6.1 - 6.5
Unit – III : Program [Given as printed Document]
Unit – IV : Page No 9.1 - 9.2, 9.9 - 9.15
Unit – V : Program [Given as printed Document]

Reference Books:

1. S.Ramasamy and P.Radhaganesan, **Programming in C (II Edition)**, Scitech Publication (India) Private Limited, Chennai, 2010.
2. E.Balagurusamy, **Programming in ANSI C (VI Edition)**, Tata McGraw Hill, New Delhi, 2012.
3. Byron Gottfried, **Programming with C (III Edition)**, Tata McGraw Hill, New Delhi, 2012.
4. E Balagurusamy, **Programming in C, Third Edition**, Tata McGraw Hill, New Delhi, 2004.
5. S.Ramasamy and P.Radhaganesan, **Programming in C**, Scitech Publication (India) Private Limited, Chennai and Hyderabad, 2006.
6. Byron Gottfried, **Theory and problems of Programming with C**, Second Edition Tata McGraw Hill, New Delhi, 2004.

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MANNAR THIRUMALAI NAICKER COLLEGE (Autonomous)

DEPARTMENT OF PHYSICS

Course Structure – Semester wise CBCS (w.e.f. 2015 – 2016)

Class : B.Sc (Physics)
Semester : II
Subject Code : 15UPHC21



Part III : Core
Hours : 04
Credits : 04

ELECTRICITY AND ELECTROMAGNETISM

Course Outcomes

CO1 To enable the students to understand the basic concepts of electricity and electromagnetism.

CO2 To understand the current conduction.

CO3 To understand the magnetic field due to electric current

Unit -I:

Electric field and flux - Gauss law statement and explanation – Applications of Gauss law – Electric field due to a point charge – Electric field due to charged spherical conductor at a point outside, inside and on the surface of the sphere - Coulomb's theorem – Electric potential – Relation between electric potential and electric field – Potential due to a point charge – Potential due to charged spherical conductor at a point outside, inside and on the surface of the sphere.

Unit -II:

Capacitance – Principle of capacitor – Effect of a Dielectric in a capacitor - Expression for the capacitance of cylindrical capacitor, parallel plate capacitor (i)With and Without dielectric, (ii)Partially filled with dielectric – Energy stored in a charged capacitor – Energy density – Loss of energy on sharing of charges between two capacitors – Types of capacitors – Uses of capacitors.

Unit -III:

Kirchhoff's laws – Application of Kirchhoff's laws to Whetstone's network – Carey Foster's Bridge – Determination of the resistance of the given wire with the necessary theory – Principle of Potentiometer – Calibration of ammeter and voltmeter (low range) – Measurement of Thermo emf using potentiometer – Seeback effect – Peltier effect – Thomson effect (explanation alone).

Unit -IV:

The Magnetic field Intensity (H) – Magnetic Induction (B) – Magnetic flux (ϕ) - Biot-Savart's law – It's applications –Magnetic induction at a point on the axis of a circular coil carrying current – Magnetic induction at a point on the axis of a solenoid – Moving coil ballistic galvanometer – Principle, construction and theory – Difference between Dead beat

and Ballistic galvanometer – Current and voltage sensitivities of a moving coil galvanometer.

Unit -V:

Faraday's laws of electromagnetic induction – Self-inductance of a long solenoid – Mutual inductance between two coaxial solenoids – Coefficient of coupling – Three magnetic vectors - magnetic induction (B), magnetic intensity (H) and magnetization(M) – Dia, Para, Ferro and Ferri magnetism – Ferrites - Magnetic susceptibility – Guoy's method – Hysteresis – Explanation and Importance of hysteresis curves.

Text Book:

1. R.Murugesan, **Electricity and Magnetism**, S.Chand and Co, 9th Revised Edition , New Delhi, 2011.

Unit – I : Page No 2.1 - 2.3, 2.6, 2.11, 3.1, 3.2, 3.3, 3.5 (simple problems)
 Unit – II : Page No 4.1, 4.4, 4.5, 4.6, 4.7, 4.9, 4.11, 4.13
 Unit – III : Page No 6.6, 7.1, 7.2, 8.1, 8.3, 8.4, 8.5.
 Unit – IV : Page No 10.1, 10.2, 10.4, 10.6, 10.11, 10.12
 Unit – V : Page No 11.1, 11.4, 11.8, 11.10, 15.1 - 15.9.

Reference Books:

1. Narayanamoorthy and Nagarathinam, **Electricity and Magnetism**, National Publishing and Co, New Delhi, 1997.
2. Sehgal, Chopra and Sehgal, **Electricity and Magnetism**, Sultan Chand and Sons, New Delhi, 1998.
3. Brijlal and Subramaniyam, **Electricity and Magnetism**, S.Chand and Co, 20th revised edition, New Delhi, 2007.

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MANNAR THIRUMALAI NAICKER COLLEGE (Autonomous)

DEPARTMENT OF PHYSICS

Course Structure – Semester wise CBCS (w.e.f. 2015 – 2016)

Class : B.Sc (Physics)
Semester : I and II
Subject Code : 15UPHCP1



Part III : Core
Hours : 02
Credits : 02

MAJOR PHYSICS PRACTICAL - I

COURSE OUTCOMES

CO1: To learn the circuit connections and functions of various experiments

CO2: To find the values of modulus constant

CO3: To develop the students knowledge in the calibration of voltmeter, ammeter and potentiometer unknown frequency of tuning fork.

FIRST YEAR

LIST OF EXPERIMENTS

SEMESTER I and II

- | | |
|---|--|
| 1. Young's Modulus | - Uniform bending (Pin and Microscope) |
| 2. Young's Modulus | - Non –Uniform bending – Optic lever |
| 3. Young's Modulus | - Canti lever – Pin and Microscope |
| 4. Sonometer | - laws of transverse vibration |
| 5. Surface tension | - by capillary rise method |
| 6. Rigidity Modulus | - Torsion Pendulum with loads |
| 7. Moment of Inertia | - Torsion Pendulum |
| 8. Sonometer | -A.C Frequency |
| 9. Melde's apparatus | - Frequency of tuning fork |
| 10. Thermal conductivity of Bad conductor | - Lee's disc |
| 11. C.F Bridge | - Resistance and specific Resistance |
| 12. C.F Bridge | - Temperature Coefficient |
| 13. Potentiometer | - Calibration of low range Voltmeter |
| 14. Potentiometer | - Calibration of Ammeter |
| 15. Compound Pendulum | - "g" |
| 16. Spectrometer | - Refractive Index of Prism |

MANNAR THIRUMALAI NAICKER COLLEGE (Autonomous)
DEPARTMENT OF PHYSICS
Course Structure – Semester wise CBCS (w.e.f. 2015 – 2016)

Class : B.Sc (Physics)
Semester : II
Sub code : 15UPHA21



Part III : Allied
Hours : 03
Credits : 02

ALLIED MATHEMATICS – II

Course Outcomes

CO1 To learn and understand about Matrices and straight lines.

CO2 To teach planes in three dimension.

CO3 To familiarize Vector differentiation and bilinear forms.

Unit - I Vector differentiations–Velocity- Acceleration, Vector Differential operators- Gradient.

Unit -II Divergence and Curl -Directional derivative- Solenoidal- Irrotational Vectors.

Unit - III Matrices – Rank of a Matrix – Consistency of equation.

Unit -IV Characteristic Equation and Cayley Hamilton theorem.

Unit - V Eigen Values and Eigen Vectors – Bilinear forms – Quadratic forms.

Text Books:

1. S.Arumugan, **Ancillary Mathematics Volume II**, New Gamma Publication, Palayamkottai, Reprint 2006.
 - a. Unit I - Chapter 1 : Page No : 1 to 20
 - b. Unit II - Chapter 1 : Page No 20 to 34
2. S.Arumugamand A.T.Isacc , **Modern Algebra**, Scitech Publication, Chennai, Reprint, 2003.
 - a. Unit III - Chapter 7 : Section 7.5 & 7.6
 - b. Unit IV - Chapter 7 : Section 7.7
 - c. Unit V - Chapter 7 : Section 7.8
Chapter 8 : Section 8.1, 8.2

Reference Books :

1. DuraiPandian, LaxmiDuraiPandian ,Udayabaskaran, **Algebra and Calculus of Vectors**,S.Viswanthan Printers and Publishers Pvt Ltd, Chennai,1980,
2. A.R.Vasishtha, **Matrices**, Krishna Prakashan and Publication Media Pvt Ltd, 45th Edition, Meerut, 2014.

MANNAR THIRUMALAI NAICKER COLLEGE (Autonomous)
DEPARTMENT OF PHYSICS
Course Structure – Semester wise CBCS (w.e.f. 2015 – 2016)

Class : B.Sc (Physics)
Semester : II
Sub code : 15UPHA22



Part III : Allied
Hours : 03
Credits : 02

ALLIED MATHEMATICS – III

Course Outcomes

- CO1 To introduce basic statistical concepts.**
- CO2 To teach various methods on curve fitting.**
- CO3 To familiarize the concepts on attributes.**

- Unit - I** Curve Fitting – Correlations.
- Unit - II** Rank Correlations – Regression.
- Unit - III** Lagranges and Newton’s Method –Interpolation.
- Unit - IV** Attributes and Index numbers.
- Unit - V** Probability – Conditional Probability and Simple problem.

Text Book:

1. S.Arumugam and A.Thangapandi Isaac, **Statistics**, New Gamma Publishing House, Palayamkottai, 2009.

Unit I - Chapter 5 : Section : 5.0 to 5.1

Chapter 6 : Section:6.1

Unit II - Chapter 6 : Section 6.2 to 6.3

Unit III - Chapter 7 : Section 7.2 to 7.3

Unit IV - Chapter 8 : Section 8.1

Chapter 9 : Section 9.1

Unit V - Chapter 11 : Section 11.0 to 11.2

Reference Books :

1. S.C.Gupta ,V.K.Kapoor,**Fundamental of Mathematical statistics**, Sultan Chand and Sons Educational Publishers, New Delhi,2009.
2. S.P.Gupta, **Statistical Methods** , Sultan Chand and Sons Educational Publishers, New Delhi,2014.

MANNAR THIRUMALAI NAICKER COLLEGE (Autonomous)**DEPARTMENT OF PHYSICS****Course Structure – Semester wise CBCS (w.e.f. 2015 – 2016)**

Class : B.Sc (Physics)
Semester : II
Subject Code : 15UPHS21



Part IV : Skill based
Hours : 02
Credits : 02

THERMAL PHYSICS**Course Outcomes**

CO1 : To enable the students to understand the basic concepts of thermal physics.

CO2 : To study the kinetic theory of gases, Joule-Kelvin effect and Black body radiation.

CO3 : To study the Stefan's law of radiation and thermodynamics the heat engine work function

Unit-I:

Postulates of Kinetic Theory of gases – Mean Free Path – Transport Phenomena - Conduction, Viscosity and Diffusion.

Unit-II:

Joule – kelvin effect – Porous plug experiment – Liquefaction of oxygen, Hydrogen and Helium – Properties of Helium 1 and Helium 2.

Unit-III:

Black body radiation – Prevost's theory – Emissive and absorptive power – Distribution of energy in black body – Wien's displacement law.

Unit-IV:

Stefan's law of radiation – Derivation of Newton's law from Stefan's law – Solar constant – Temperature of the Sun - Angstrom'spyrhelio meter – Solar Spectrum.

Unit -V:

Thermodynamics – Zeroth law –I, II and III law of Thermodynamics – Entropy – Change of entropy in reversible and irreversible process – Heat death - Change of entropy in converting ice into steam.

Text Book:

1. R.Murugesan, **Thermal Physics**, [B.Sc. Major Physics] 1stEdition ,Madurai,January 2011.
 Unit – I : Page No 1.1, 1.3 - 1.7
 Unit – II : Page No 2.1 - 2.14
 Unit – III : Page No 3.1 - 3.11
 Unit – IV : Page No 4.1 - 4.8
 Unit – V : Page No 5.1 - 5.13

Reference Books:

1. Brjlal, Subramaniam and P.S. Hemne, **Heat, Thermodynamics and Statistical Physics**, S. Chand and Co, New Delhi, 2004.
2. D.S. Mathur, **Heat and Thermodynamics**, S. Chand and Co, New Delhi, 2002.
3. R. Murugesan, **Heat and Thermodynamics**, S. Chand and Co, New Delhi, 2004.
4. D.Haliday, Resnick and J. Walker, **Fundamentals of Physics**, 6th Edition, New Delhi, 2012.

PREPARED BY: Mrs.A.Lakshmi

VERIFIED BY: Mrs.A.Lakshmi

Approved by the Board of Studies held on 14 -09-2015

Dr.S.P.Subbiah
(Dean of Science)

MANNAR THIRUMALAI NAICKER COLLEGE (Autonomous)**DEPARTMENT OF PHYSICS****Course Structure – Semester wise CBCS (w.e.f. 2015 – 2016)**

Class : B.Sc (Physics)
Semester : II
Subject Code : 15UPHS22



Part IV : Skill based
Hours : 02
Credits : 02

PROGRAMMING IN C - II**Course Outcomes**

CO1 : To enable the students to understand the basic concepts of programming in C.

CO2 : Students can create and identify the solutions for problem solving methods with help of c programming

CO3 : Students can work with function.

Unit -I:

Defining an Array – Processing an array – One dimensional arrays, Two dimensional arrays – Multidimensional arrays – Passing arrays to functions – programmers using arrays and strings.

Unit- II:

To multiply two matrices of order (1xm) and (mxn) – To add and subtract two matrices – To arrange the given set of numbers in ascending order – To arrange given set of numbers in descending order.

Unit- III:

To find the arithmetic mean, geometric mean and harmonic mean of a given set of numbers.

Unit -IV:

Defining a structure – Processing a structure – Arrays of Structures – Arrays within structures – Unions – bit fields – programmes using structure – to print currently date and time using functions.

Unit -V:

To prepare the salary bill for employees of a company – Pointers – fundamentals – Pointer declarations – pointers and simple variables.

Text Book:

1. E. Balagurusamy, **Programming in ANSI C**, Fourth Edition, Tata McGraw Hill, New Delhi, Tenth Reprint, 2009.
 Unit – I : Page No 7.1, 7.2, 7.4 - 7.9
 Unit – II : [Program given as printed Document]
 Unit – III : [Program given as printed Document]
 Unit – IV : Page No 10.1 - 10.14
 Unit – V : Page No 11.1 - 11.8, [Program given as printed Document]

Reference Books:

1. S. Ramasamy and P. Radhaganesan, **Programming in C II Edition**, Scitech Publication (India) Private Limited, Chennai, 2010.
2. E. Balagurusamy, **Programming in ANSI**, VI Edition, Tata McGraw Hill, New Delhi, 2012.
3. Byron Gottfried, **Programming with C**, III Edition, Tata McGraw Hill, New Delhi, 2012.
4. E. Balagurusamy, **Programming in C**, III Edition, Tata McGraw Hill, New Delhi, 2004.
5. S. Ramasamy and P. Radhaganesan, **Programming in C**, Scitech Publications Pvt. Ltd., Chennai and Hyderabad, 2006.
6. Byron Gottfried, **Theory and Problems of Programming in C**, II Edition, Tata McGraw Hill, New Delhi, 2006.

REPAIRED BY: Mr.D.Selva Anand**VERIFIED BY: Mrs.A.Lakshmi****Approved by the Board of Studies held on 14-09-2015****Dr.S.P.Subbiah**
(Dean of Science)

MANNAR THIRUMALAI NAICKER COLLEGE (Autonomous)
DEPARTMENT OF PHYSICS
Course Structure – Semester wise CBCS (w.e.f. 2015 – 2016)

Class : UG
Semester : II
Subject Code : 15UVLG21



Part IV : **Mandatory Subject**
Credits : **02**
Hours : **02**

VALUE EDUCATION

- Unit- I** : **Values and the Individual:** Values – Meaning – The significance of Values – Classification of Values – Need for Value Education – Values and the Individual – Self-Discipline – Self-Confidence – Self-Initiative – Empathy – Compassion – Forgiveness – Honesty and Courage.
- Unit- II** : **Religions and Values:** Objectives – Introduction to Religious Values – Karma Yoga in Hinduism – Love and Justice in Christianity – Brotherhood in Islam – Compassion in Buddhism – Ahimsa in Jainism – Courage in Sikhism – Need for Religious Harmony.
- Unit- III** : **Values and Society:** Definition of Society – Democracy – Secularism – Socialism – Gender Justice – Human Rights – Socio-Political Awareness – Social Integration – Social Justice.
- Unit- IV** : **Professional Values:** Definition – Accountability – Willingness to learn – Team Spirit – Competence Development – Honesty – Transparency – Respecting others – Democratic functioning – Integrity and Commitment.
- Unit- V** : **Role of Social Institutions in Value Formation:** Social Institutions – Role of Family – Educational Institutions – Society – Peer Groups – Mass Media.

Text Book:

Text Module for **Value Education**, Publications Division, Madurai Kamaraj University, Madurai – 625 021. First Edition 2010.

Reference Books:

1. N.S.Raghunathan, **Value Education**, Margham Publications, 24, Rameswaram Road, T.Ngar, Chennai – 600 017. First Edition 2010. Reprint 2012.
2. Dr.P.Saravanan, and P.Andichamy, **Value Education**, Merit India Publications, (Educational Publishers), 5, Pudumandapam, Madurai-625001. First Edition 2011.