C. ABDUL HAKEEM COLLEGE [AUTONOMOUS]

[Affiliated to Thiruvalluvar University, Ranipet District]

MELVISHARAM – 632509

Syllabus under CBCS Pattern

Learning Outcome Based Curriculum Frame work [LOCF]

with effect from 2018 onwards

B.Sc. Mathematics

Prepared By

PG & Research Department of Mathematics

C. ABDUL HAKEEM COLLEGE (AUTONOMOUS), MELVISHARAM.

Programme Outcomes (POs) for Bachelor of Science

PO1: Critical Thinking and Scientific Reasoning

Capable of critical thought after attaining basic disciplinary knowledge and understanding of major concepts, theoretical principles and experimental findings for scientific reasoning in the field of basic sciences.

PO2: Problem Solving

Ability to have effective problem-solving skills in relevance to the society based on the knowledge and skills acquired from sciences.

PO3: Skill Development

Capable of demonstrating research, including wider interdisciplinary areas, as well as the ability to use current instruments/information technology in science-related fields. Improving the standard of science with a strong scientific temperament, leadership, and governing abilities.

PO4: Computational/Digital Literacy

Capable of locating, retrieving, and evaluating various science-related needs using computer/mobile-based digital literacy and search resources.

PO5: Effective Communication

Ability to communicate deep technical science information in writing and orally.

PO6: Moral and Ethical Awareness

Capable of carrying out their work with integrity and accuracy, avoiding unethical behaviours such as exaggeration, falsification, misrepresentation or plagiarism. Environmental and sustainability problems in the local area are being brought to the attention of the public.

PO7: Social Responsibility

Demonstrate numerous social issues, empathy and equity-based personal growth, as well as the opportunity to volunteer in real life and function as a true citizen.

PO8: Life-long Learning

Capable of self-paced and self-directed learning for personal growth, as well as imparting knowledge/skills for society re-skilling.

PROGRAM SPECIFIC OUTCOMES

PSOs for B. Sc Mathematics

1. Employ their Mathematical skills to translate the given verbal information into Mathematical representations.
2. Demonstrate their analytical and computational skills in solving Mathematical problems in various disciplines.
3. Apply both quantitative and qualitative knowledge for their future career.

(For Candidates admitted from June 2018 onwards)

C. ABDUL HAKEEM COLLEGE (AUTONOMOUS), MELVISHARAM-632509

PG AND RESEARCH DEPARTMENT OF MATHEMATICS

I YEAR

S. No	Part	Course Title	Subject Codes	Hrs/ week	Credits	Title of the Paper	Maximum Marks		
I YEAR			**SEMESTER I**				**CIA Marks**	**EXT Marks**	**TOTAL Marks**
1	I	Language	U18FTA101/ U18FUR101	6	4	Tamil/Urdu/Others-I	25	75	100
2	II	English	U18FEN101	6	4	English-I	25	75	100
3	III	Main-Theory	U18MMA101	5	3	Algebra & Trigonometry-I	25	75	100
4	III	Main-Theory	U18MMA102	4	3	Differential Calculus & 3-D Geometry	25	75	100
5	III	Allied-I Theory	U18APH101/ U18AMA102	4	4	Physics- I/ Numerical Methods-I	25	75	100
	III	Allied-I Practical	U18APHP21	3	0	Allied Practical-Physics	0	0	0
6	IV	Environmental Studies	U18CES101	2	2	Environmental Studies	25	75	100
				30	**20**		**150**	**450**	**600**
I YEAR			**SEMESTER II**				**CIA Marks**	**EXT Marks**	**TOTAL Marks**
7	I	Language	U18FTA201/ U18FUR201	6	4	Tamil/Urdu/Others-II	25	75	100
8	II	English	U18FEN201	4	4	English-II	25	75	100
9	III	Main-Theory	U18MMA201	4	3	Algebra & Trigonometry-II	25	75	100
10	III	Main-Theory	U18MMA202	4	3	Integral Calculus & 3-D Geometry	25	75	100

11	III	Main-Practical	U18MMAP21	1	1	Practical-I Computational Techniques-I	25	75	100
12	III	Allied-I Theory	U18APH201/ U18AMA202	4	4	Physics- II/ Numerical Methods-II	25	75	100
13	III	Allied-I Practical	U18APHP21	3	2	Allied Practical-physics	25	75	100
14	IV	Soft Skills	U18CSS201	2	1	Soft Skills	25	75	100
15	IV	Value Education	U18CVE201	2	2	Value Education	25	75	100
				30	**24**		**225**	**675**	**900**

II YEAR

S. No	**Part**	**Course Title**	**Subject Codes**	**Hrs/ week**	**Credits**	**Title of the Paper**	**Maximum Marks**		
II YEAR			**SEMESTER III**				**CIA Marks**	**EXT. Marks**	**TOTAL Marks**
16	I	Language	U18FTA301/ U18FUR301	6	4	Tamil/Urdu/Others-III	25	75	100
17	II	English	U18FEN301	6	4	English-III	25	75	100
18	III	Main-Theory	U18MMA301	4	4	Differential Equations	25	75	100
19	III	Main-Practical	U18MMAP31	2	1	Practical-II Computational Techniques-II	25	75	100
20		Allied-II Theory	U18ACH301/ U18ACH302	4	4	Chemistry-I/ Biochemistry-I	25	75	100
	III	Allied-II Practical	U18ACHP41/ U18ACHP42	3	0	Allied Practical-Chemistry/ Biochemistry	0	0	0
21	IV	Skill Based Subject	U18SMA301	3	3	Mathematics for Competitive Examinations **(SBS-I)**	25	75	100

22	IV	Non-Major Elective	1 out of 7	2	2	Choose 1 out of 7 **(NME-I)**	25	75	100
				30	**22**		**175**	**525**	**700**
II YEAR			**SEMESTER IV**				**CIA Marks**	**EXT Marks**	**TOTAL Marks**
23	I	Language	U18FTA401/ U18FUR401	6/4*	4/3*	Tamil/Urdu/Others-IV	25	75	100
24	II	English	U18FEN401	6	4	English-IV	25	75	100
25	III	Main-Theory	U18MMA401	4	4	Vector Analysis & Fourier Analysis	25	75	100
26	III	Main-Practical	U18MMAP41	2	1	Practical-III Problem solving Techniques using GeoGebra and MATLAB	25	75	100
27		Allied-II Theory	U18ACH401/ U18ACH402	4	4	Chemistry-II/ Biochemistry-II	25	75	100
28	III	Allied-II Practical	U18ACHP41/ U18ACHP42	3	2	Allied Practical-Chemistry/ Biochemistry	25	75	100
29	IV	Skill Based Subject	U18SMA401	3	3	Linear Programming **(SBS-II)**	25	75	100
30	IV	Non-Major Elective	1 out of 7	2	2	Choose 1 out of 7 **(NME-II)**	25	75	100
31	I	Urdu Lab	U18FURP41	2*	1*	Practical Urdu	25	75	100
				30	**24**		**225**	**675**	**900**

*** Urdu**

III YEAR

S.No	Part	Course Title	Subject Codes	Hrs/ week	Credits	Title of the Paper	Maximum Marks		
III YEAR		**SEMESTER V**					**CIA Marks**	**EXT Marks**	**TOTAL Marks**
32	III	Main- Theory	U18MMA501	5	4	Abstract Algebra	25	75	100
33	III	Main-Theory	U18MMA502	6	4	Real Analysis-I	25	75	100
34	III	Main-Theory	U18MMA503	5	4	Complex Analysis	25	75	100
35	III	Main-Theory	U18MMA504	5	4	Graph Theory	25	75	100
36	III	Elective	U18EMA501/ U18EMA502	4	3	Mathematical Statistics/ Operations Research **(Elective I)**	25	75	100
37	III	Elective-Practical	U18EMAP51	2	1	Practical-I Mathematical Statistics	25	75	100
38	III	Main	U18EINP51	0	2	Internship Training	25	75	100
39	IV	Skill Based Subject	U18SMA501	3	3	Quantitative Techniques **(SBS-III)**	25	75	100
				30	**25**		**200**	**600**	**800**
III YEAR		**SEMESTER VI**					**CIA Marks**	**EXT Marks**	**TOTAL Marks**
40	III	Main- Theory	U18MMA601	5	4	Linear Algebra	25	75	100
41	III	Main-Theory	U18MMA602	6	4	Real Analysis-II	25	75	100
42	III	Main-Theory	U18MMA603	6	4	Mechanics	25	75	100
43	III	Main-Theory	U18MMA604	3	3	Programming in C language	25	75	100
44	III	Main-Practical	U18MMAP61	3	2	Practical- V Programming in C Language	25	75	100

45	III	Elective	U18EMA601/ U18EMA602	4	4	Calculus of Finite Difference and Numerical Methods/ Special Functions **(Elective II)**	25	75	100
46	IV	Skill Based Subject	U18SMA601	3	3	Fundamental of applied mathematics **(SBS-IV)**	25	75	100
47	V	Extension Activities	U18CEA601	0	1	Extension Activities	100	-	100
				30	**25**		**275**	**525**	**800**

C. ABDUL HAKEEM COLLEGE (Autonomous), Melvisharam

Syllabus for First year B.A.,B.Sc.,&B.Com (C.S) effective from the year 2018-2019

Class	: UG First year B.A.,B.Sc.,&B.Com (C.S)	Semester	: I
Subject Code	: U18FTA101	Title	: Part-I Tamil
Credits	: 4	Max Marks	: 75

OBJECTIVES	தமிழ் மொழியின் இலக்கிய, இலக்கணச் செழுமைகளைப் பயிற்சிகளின் வழி வெளிக்கொணர்தல்.
COURSE OUTCOME(S)	
CO1	பக்தி இயக்க காலத்தில் சமூகப் பண்பாட்டு வரலாற்றை இனம் காணல். கவிதை வழி சமூகச் சிந்தனைகளையும் இயற்கையின் முக்கியத்துவத்தையும் கவிதை வழி இயம்பல்.
CO2	தமிழ் உரைநடை இலக்கியங்களில் உள்ள நேர மேலாண்மை மற்றும் அறிவியல் தமிழ் குறித்த பதிவுகளை விளக்குதல். தமிழ்ச் சிறுகதைகளில் தனி மனித மன உணர்வுகளை வெளிக் கொணரல்.
CO3	செவ்வியல் இலக்கிய நெடிய வரலாறு, இலக்கணப் பயிற்சி வழி போட்டித் தேர்வுகளை எதிர்கொள்ளல்.

பாடத்திட்டம்

அலகு - 1 பக்தி

1. திருமூலர் - திருமந்திரம் (7 பாடல்கள்)
2. மு. மேத்தா - நாயகம் ஒரு காவியம்
   அ. தலைக்கு விலை
   ஆ. சிலந்தி செய்த செயல்
3. சேவியர் - இயேசுவின் கதை
   அ. சிலுவை, ஆ. உன்னதரின் உயிர்ப்பு

அலகு - 2 கவிதை

1. பாரதியார் - கண்ணம்மா என் குழந்தை (முழுவதும்)
2. பாரதிதாசன் - குடும்ப விளக்கு - முதியோர் காதல் (தேர்ந்தெடுத்த 10 பாடல்கள்)
3. கவிமணி - ஆறு தன் வரலாறு கூறுதல்
4. நா.காமராசன் - கறுப்பு மலர்கள்
   அ. வானவில், ஆ. கடல்
5. அப்துல் காதர் - மின்னல் திரிகள் - மெழுகுவர்த்தியும் ஊதுவத்தியும்

அலகு - 3 உரைநடை

1. அப்துல் ரகுமான் - எம்மொழி செம்மொழி
2. வா.செ. குழந்தைசாமி - அறிவியலும் வறுமையொழிப்பும்
3. வெ. இறையன்பு - நேரம் கடிகாரத்தில் இல்லை

அலகு - 4 சிறுகதை

1. மேலாண்மை பொன்னுசாமி - அன்பூவாசம்
2. வைரமுத்து - இப்படியும் ஒருவன் இறந்தான்
3. வண்ணதாசன் - ஓர் உல்லாசப் பயணம்

அலகு - 5

அ. இலக்கிய வரலாறு

1. பக்தி & சமய இலக்கியங்கள் - அறிமுகம்
   (சைவம், இசுலாம், கிறித்தவம்)
2. இக்கால இலக்கியங்கள் - தோற்றமும் வளர்ச்சியும்
   (கவிதை, உரைநடை, சிறுகதை)

ஆ. திறனறிப் பயிற்சி

1. அகரவரிசைப்படுத்துதல்
2. வல்லினம் மிகும் இடங்கள்
3. வல்லினம் மிகா இடங்கள்
4. சந்திப்பிழை நீக்குதல்
5. பொதுக் கட்டுரை

பார்வை நூல்கள்

1	இலக்கியச் சோலை	-	சி.அப்துல் ஹக்கீம் கல்லூரி வெளியீடு. 2018 சூன் வெளியீடு
2	மினனல் திரிகள்	-	அப்துல் காதர் சல்மா பதிப்பகம்,வாணியம்பாடி, முதல் பதிப்பு,2004
3	இயேசுவின் கதை	-	சேவியர் யாளி பதிவு வெளியீடு, கோடம்பாக்கம் சென்னை- 24 முதல் பதிப்பு -2005
4	எம்மொழி செம்மொழி	-	கவிக்கோ அப்துல் ரகுமான் நேஷனல் பப்ளிஸர்ஸ்,தி.நகர், சென்னை -17 முதல் பதிப்பு -2010
5	தமிழ் இலக்கிய வரலாறு	-	பேரா.மது.ச.விமலானந்தம் அபிராமி பதிப்பகம், இராயபுரம், சென்னை -13 மறு பதிப்பு -2002
6	நற்றமிழ் இலக்கணம்	-	டாக்டர்.சொ.பரமசிவம், பட்டுப் பதிப்பகம், 1269, 32-ஆம் தெரு அண்ணாநகர் மேற்கு, கம்பர் குடியிருப்பு, சென்னை -40 பன்னிரண்டாம் பதிப்பு -2012

Syllabus for all I Year UG Course effective from the year 2018-2019						
Year:	I Year		**Subject Code:**	U18FUR101	**Semester:**	I
Part I	**Title:** Urdu – I (**Prose, Grammar & Letter Writing)**					
Credits:	4				**Max. Marks:** 75	

OBJECTIVES	✓ To promote students' proficiency in the basics of Urdu. ✓ To accelerate their zeal to cultivate Writing Skills. ✓ To strengthen their reading and receptive skills.
COURSE OUTCOME(S): On completion of the course, students will be able to	
COURSE OUTCOMES	➢ Students will acquire the required academic efficiency. ➢ They will be learning the techniques of exemplary writing. ➢ They will develop ability to foster fast reading of Texts.

Unit – I

1.SAIR PAHLAY DARWESH KI – Meer Amman Dehalvi
2.UMEED KI KHUSHI – Sir Syed
3.Letter to the Principal Seeking Leave

Unit – II

1.MIRZA GHALIB KE AKHLAQ WA ADAT – Moulana hali
2.ZUBAIDA KHATOON – Abdul Haleem Sharar
3.Zameer Aur Uski Khismien
4.Letter to the Manager of a Firm Seeking Employment

Unit – III

1.NOOR JHAN – Mohamed Hussain Azad
2.SAWERE JO KAL ANKH MERI KHULI – Patras Bukhari
3.Sifat Aur Uski Khimein
4.Letter to a Publisher of Book Seller Placing Order for Books

Unit – IV

1.KHUD GHARAZ DOST – Duputi Nazeer Ahmed
2.SIR SYED MARHOOM AUR URDU LITERATURE – Allama Shibli
3.Letter to the Father / Guardian Asking Money for Payment of College Fees

Unit – V

1.Letter to a Friend Inviting Him to Your Sister's Marriage
2.Sifat Aur Uski Khimein
3.Fe'l Aur Uski Khimein
4.Lawazim-E-Ism
5.Alamat-E-Fael "Nay" Aur Alamat-E-Mafo'ol "Ko" Ke Quaide

BOOK PRESCRIBED:

"ADAB-E-JAMEEL" Published by Dept. of Urdu, C. Abdul Hakeem College, Melvisharam.

Syllabus for B.A., / B.Sc., / B.Com., Corp. Sec. Course effective from the year 2018-2019						
Year:	I Year		**Subject Code :**	U18FEN101	**Semester:**	I
Part II	**Title:** English – I					
Credits:	4			**Max. Marks:** 75		

COURSE OUTCOME(S):	
CO1	Understand various forms of literature like Prose, Poetry, Biography, Short Story and Drama.
CO2	Acquire the knowledge of grammatical system of English Language and also develop four Language Skills. (LSRW)

UNIT - I — PROSE

1. The Curse of Untouchability — M.K. Gandhi
2. India and Democracy — Dr. B.R. Ambedkar
3. The Ant and the Grasshopper — W.S. Maugham
4. My Lost Dollar — Stephan Leacock

UNIT – II — POETRY

1. All the World is a Stage — William Shakespeare
2. La Belle Dame Sans Merci — John Keats
3. Ozymandias — P.B. Shelley
4. A River — A.K. Ramanujan

UNIT - III — SHORT STORIES

1. The Doctor's Word — R. K. Narayan
2. The Model Millionaire — Oscar Wilde

UNIT - IV **ONE-ACT PLAY & BIOGRAPHY**

1. The Refund Fritz Karinthy
2. Biography of Socrates

UNIT - V **WARM UP**

1. **Lexical Skills:**
    1. Words
    2. Synonyms and Antonyms
    3. Homonyms, Homophones
    4. Words often confused
2. **Descriptive Grammar:**
    1. Describing the Parts of Speech
    2. The Phrase and The Clause
    3. The Sentence and its types
    4. Nouns
3. **Traditional Grammar:**
    1. The Tenses- Introduction

        Present Tense
        - Simple Present Tense
        - Present Continuous Tense
        - Present Perfect Tense
        - Present Perfect Continuous Tense
    2. Voice of the Verb
4. **Communication Skills (LSRW):**
    1. Greeting
    2. Introducing
    3. Inviting someone
    4. Seeking Permission

5. **Composition:**

1. Letter Writing
2. Dialogue Writing
3. Report Writing
4. Précis Writing
5. Reading for Comprehension

Prescribed Book: HALL OF FAME – I Board of Editors, Published by Emerald publishers, Egmore, Chennai – 600 008: www.emeraldpublishers.com, Mail: info@emeraldpubliser.com

Syllabus for I B.Sc. Mathematics effective from the year 2018-2019						
Year:	I Year		**Subject Code :**	U18MMA101	**Semester:**	I
Part III	**Title:** Algebra & Trigonometry – I					
Credits:	3			**Max. Marks:** 75		

CORE PAPER – 1

OBJECTIVES	Students are exposed to theory of equations, Summation of series and fundamentals of trigonometry.

Course Outcomes: At the end of the course, the students will able to	
CO1	Relate the roots of the polynomial equations and its coefficients and solve the reciprocal equations.
CO2	Examine the nature of the roots of the polynomial equation and Apply Newton's Raphson method, Horner's method to find approximate solution of the polynomial equations.
CO3	Express multiples of θ interms of powers of θ of trigonometry function and vice versa.
CO4	Evaluate the sum of the series by using Binomial, Logarithm, and Exponential series.

ALGEBRA:

UNIT - I: THEORY OF EQUATIONS

Relation between the roots and the coefficients of a polynomial equations - Imaginary and Irrational roots - Symmetric functions of roots in terms of coefficients - Reciprocal equations.

Chapter: 7 Sec: 7.1 - 7.6 (Book 1)

UNIT - II: THEORY OF EQUATIONS (Contd...)

Transformation of equations: Multiplication of roots by m, Diminish the roots by m, Increase the roots by m, Removal of term.

Descartes rule of signs - Approximate solutions of polynomials by Horner's method - Newton's method of solution of a cubic polynomial.

Chapter: 7 Sec: 7.7 - 7.14 (Book 1)

UNIT - III: SUMMATION OF SERIES

Summation of series using Binomial - Exponential and Logarithmic series (Theorems without proofs) - Approximation using Binomial & Exponential series.

Chapter: 2, 3, 4 (Full) (Book 1)

TRIGONOMETRY:

UNIT - IV:

Inverse circular functions - Expansions for cos nθ, sin nθ - Expansion of tan nθ in terms of tan θ - Expansion of tan(A+B+C+ …).

Chapter: 2 (Full), 5 Sec: 5.1 - 5.3. (Book 2)

UNIT - V:

Expansions for $\cos^n\theta$, $\sin^n\theta$ in terms of multiple angles of θ - Express $\cos^n\theta$ in terms of cosines of multiples of θ - Expansions of sin θ and cos θ in ascending powers of θ - Expansion of tan θ.

Chapter: 5 Sec: 5.4 – 5.7. (Book 2)

Recommended Text:

1. P.R.Vittal, V.Malini, Algebra, Analytical Geometry and Trigonometry, Margham Publications, Chennai.
2. P.R.Vittal (2004) Trigonometry, Margham Publications, Chennai.

Reference Books:

1.T.K.Manicavachagom Pillay, T.Natarajan and K.S.Ganapathy. (2004) Algebra, Volume I & II S.Viswanathan Printers & Publishers Pvt. Ltd. Chennai.

2. P.Kandasamy, K.Thilagavathy (2004), Mathematics for B.Sc. Vol-I, II, III & IV, S.Chand & Company Ltd., New Delhi-55.

3.A.Singaravelu (2003) Algebra and Trigonometry, Vol.-I Meenakshi Agency, Chennai.

Syllabus for I B.Sc. Mathematics effective from the year 2018-2019						
Year:	I Year		**Subject Code:**	U18MMA102	**Semester:**	I
Part III	**Title:** Differential Calculus & 3 - Dimensional Geometry					
Credits:	3				**Max. Marks:** 75	

CORE PAPER - 2

OBJECTIVES	This course aims to use the concepts of differentiation in applied mathematical problems. It aims to study about the analytical geometry of three dimensions

Course Outcomes: At the end of the Course, the Students will able to	
CO1	Compute nth derivative, Jacobians and Maxima & Minima of functions of two and three variables.
CO2	Evaluate Curvature, Radius of Curvature & To find p-r equation of the curve.
CO3	Identify the number of asymptotes parallel to coordinate axes and To find the asymptotes of rational algebraic curve.
CO4	Calculate angle between the planes, a plane and a straight line and to find the equation of the plane and straight line.

DIFFERENTIAL CALCULUS:

UNIT - I

Differential Calculus: n^{th} derivative - Leibnitz's theorem (without proof) and its application - Jacobians - Total differential - Maxima and Minima functions of 2 & 3 independent variables, Lagrange's method (without proof) - problems on this concept.
Chapter: 1 & 2 (Full) (Book 1)
Chapter: 3 (Sec: 2, 3, 4, 5) (Book 1)

UNIT - II:

Polar coordinates - Angle between radius vector and tangent - Angle between two curves, p-r equation, Curvature, Radius of curvature in Cartesian and polar coordinates.
Chapter: 5 & 6 (Full) (Book 1)

UNIT - III:

Asymptotes: Methods (without proof) of finding asymptotes of rational algebraic curves with special cases.
Chapter: 7 (Full) (Book 1)

3 - DIMENSIONAL GEOMETRY:

UNIT - IV: PLANES

Equation of a plane (General, intercept, normal forms, passing through a given point) - angle between two planes - perpendicular distance from the point to the plane - equation of the plane through the intersection of two given planes - simple problems.
Chapter: 3 (Full) (Book 2)

UNIT - V: STRAIGHT LINES

Straight lines: Symmetrical form of a straight line - angle between a plane and a line - coplanar lines - the length and equations of the shortest distance.
Chapter: 4 (Full) (Book 2)

Recommended Text:

1. P.R.Vittal and V.Malini (2000) 3rd Revised Edition, Calculus, Margham Publication, Chennai.
2. P.R.Vittal (1999) 2nd Edition, Vector Analysis, Analytical Solid Geometry & Sequences and Series, Margham Publication, Chennai.

Reference Books:

1.S.Narayanan and T.K.Manicavachagom Pillay (2004) Calculus. S.Viswanathan Printers & Publishers Pvt. Ltd. Chennai.
2. Shanti Narayan (2001) Differential Calculus. Shyamlal Charitable Trust, New Delhi.
3. T.K.Manickavachagom Pillay & others. (2004) Analytical Geometry (Two & Three Dimensions) S.Viswanathan Printers & Publishers Pvt. Ltd. Chennai.
4. G.B.Thomas and R.L.Finney.(1998) Calculus and Analytic Geometry, Addison Wesley (9th Edn.), Mass. (Indian Print).

Syllabus for B.Sc., Mathematics / Chemistry effective from the year 2018-2019						
Year:	I Year		**Subject Code:**	U18APH101	**Semester:**	I
Part III	**Title:** Physics -I (Allied)					
Credits:	4			**Max. Marks:** 75		

OBJECTIVES	To learn concise ideas about basic physics and their applications in day-to-day life

Course Outcomes: At the end of the Course, the Students will able to	
CO1	Remember the Properties of Matter, types of moduli and viscous nature of surface force
CO2	Understand the laws of gravitation, principle of rockets motion.
CO3	Remember the laws of thermodynamics and applications
CO4	Recall and explain the concepts of electrical measurements and magnetism.
CO5	To learn the production of ultrasonic waves, the concepts of acoustics and their applications

Unit 1: Properties of Matter

Elasticity – Hookes Law – Different moduli of Elasticity – Poisson's ratio – Theory of non-uniform bending - determination of Young's modulus by non-uniform bending (pin and microscope) - Torsional pendulum – Expression for period of oscillation - determination of rigidity modulus without masses (experiment).

Viscosity – Streamlined and turbulent flow – Poiseuille's formula for the flow of a liquid through a capillary tube - Determination of coefficient of viscosity of a liquid (variable pressure head) – Poiseuille's method.

Surface tension – Jaegar's method to determine surface tension – Variation of surface tension with temperature.

Unit 2: Mechanics

Newton's law of gravitation – Mass and mean density of the earth - Kepler's laws - Determination of gravitational constant – Boy's method.

Laws of floatation – metacentre – metacentric height of a ship – Bernoulli's theorem explanation - venturimeter.

Rocket motion - Principle –Theory – Velocity of rocket – Rocket propulsion systems – Multistage rockets - Artificial satellites.

Unit 3: Thermal Physics

Heat engine – Efficiency – Carnot's Theorem – Otto and Diesel engines – Construction, working and efficiency.

Coefficient of thermal conductivity – Determination of thermal conductivity of a bad conductor by Lee's disc method - Practical applications of conduction of heat.

Regenerative cooling - Liquefaction of air (Linde's process) – Liquefaction of helium (Onnes method) – applications of low temperatures.

Unit 4: Electricity and Magnetism

Potentiometer – Principle – Calibration of low range voltmeter and ammeter - Principle of a capacitor – Parallel plate capacitor – Spherical capacitor - Energy stored in a capacitor.

Seebeck effect – Laws of thermo E.M.F. – Thermo couple - Determination of Thermo E.M.F. using potentiometer – Applications of thermo-electricity.

Magnetic Induction (B) – Magnetisation (M) - Magnetising field (H) – Relationship between B, H and M – Magnetic susceptibility – Magnetic permeability – Electron theory of para, dia, and ferro magnetism – Explanation (Qualitative only) - Properties of para, dia and ferro magnetic materials.

Unit 5: Acoustics and Ultrasonics

Transverse waves – Expression for the velocity of transverse waves in a stretched string – Frequency of transverse vibration of stretched strings – verification of laws of transverse vibration of string using sonometer.

Acoustics of building - Reverberation time – Sabine's formula (no derivation) – absorption coefficient – factors affecting acoustics of building.

Introduction to ultrasonics – piezoelectric effect – production of ultrasonic waves by piezoelectric method – uses of ultrasonic waves.

Books for Study:

1. Allied Physics , R. Murugeshan S. Chand & Co., (2005)
2. Properties of Matter and Acoustics, R. Murugeshan and Kiruthiga Sivaprasath, S. Chand & Co., (2014).
3. Mechanics and Mathematical Physics, R. Murugeshan, S. Chand & Co., (2013).
4. Thermal Physics, R.Murugeshan and Kiruthiga Sivaprasath, S. Chand & Co, (2004).
5. Electricity and Magnetism, R. Murugeshan, S. Chand & Co., (2013).
6. Engineering Physics – I, Dr. P. Mani (2106)

Books for Reference:

1. College Physics Volume I and II, A.B. Gupta, Books and Allied (P) Ltd. (2014)
2. Heat and Thermodynamics, Brij Lal and N.Subrahmanyam, S. Chand & Co., (2006).
3. Elements of Properties of Matter, D.S. Mathur, S. Chand & Co. (1999).

Syllabus for III B.Sc. Mathematics effective from the year 2018-2019						
Year:	I		**Subject Code :**	U18AMA102	**Semester:**	I
Part III	**Title:** Numerical Methods - I					
Credits:	4				**Max. Marks:** 75	

Objectives: This Course will cover basic methods for finding the finite differences, central differences, inverse interpolation, summation of series, Interpolation for equal and unequal intervals, solutions of simultaneous equations, important principles, Method and processes to get numerical results, Reliability of numerical result.

Course Outcomes: At the end of the Course, the Students will able to	
CO1	Compute the value and derivative of a function at a point in the given intervals by using appropriate interpolation methods.
CO2	Solve simultaneous linear equations by using Gauss elimination method, Matrix inversion method, Gauss- Jordan Method, Gauss-Seidal Method.
CO3	Evaluate the approximate value of the definite integral by utilizing Newton's and Gauss forward and backward differences formulae.
CO4	Identify the numerical solution by using inverse interpolation.

UNIT I: Finite Differences

First and higher order differences – forward differences and backward differences – properties of operators – Differences of a polynomial – Factorial polynomials – Operator E, Relation between Δ, ∇ and E – Interpolation – Newton – Gregory forward and backward formulae for interpolation.

UNIT II: Central Differences

Central difference Operators – Central difference formulae: Gauss Forward and Backward formulae – sterling's formula – Bessel's formula.

UNIT III: Interpolation for unequal intervals

Divided differences – Newton's divided formula and Lagrange's – Estimating the missing terms (with one or more missing values).

UNIT IV: Inverse Interpolation

Lagrange's method and Reversion of series Method (using Newton's forward formula only). Summation of series: Sum to n term of the series whose general term is the first difference of a function – summation by parts.

UNIT V: Solutions of simultaneous linear Equations

Gauss elimination method – matrix inversion method – Gauss – Jordan method, Gauss Seidal method (Three unknowns only).

Recommended Text

1. B.D. Gupta.(2001) Numerical Analysis.Konark Pub. Ltd., Delhi
2. M.K. Venkataraman. (1992) Numerical methods for Science and Engineering National Publishing Company, Chennai.

Reference Books

1. S. Arumugham. (2003) Numerical Methods, New Gamma Publishing, Palamkottai.
2. H.C. Saxena. (1991) Finite differences and Numerical analysis S.Chand & Co.,Delhi
3. A.Singaravelu (2004). Numerical MethodsMeenakshi Agency, Chennai
4. P.Kandasamy, K.Thilagavathy (2003) Calculus of Finite difference & Numerical Analysis, S. Chand & Company Ltd., New Delhi-55.

Syllabus for B.Sc., Mathematics / Chemistry effective from the year 2018-2019						
Year:	I Year		**Subject Code :**	U18APHP21	**Semester:**	I
Part III	**Title:** Physics -I (Allied Practical)					
Credits:	0				**Max. Marks:** 00	

OBJECTIVES	• To learn the techniques of handling simple measuring instruments in physics • To measure certain basic mechanical, optical, electrical and magnetic properties of matter. • To study the characteristics of diode, transistor and ICs and their usage.

Course Outcomes: At the end of the Course, the Students will able to	
CO1	understand and evaluate the Young's modulus and Rigidity modulus of the given material
CO2	understand the principles of optics through air wedge and spectrometer experiments
CO3	Construct a voltage regulation using zener diodes
CO4	remember the functions of logic gates.
CO5	understand and analyze the characteristics of various diodes
CO6	Skill Development-Practical exposure

(Any 15 Experiments)

1. Young's modulus – non uniform bending – pin and microscope.
2. Rigidity modulus – Static Torsion Method Using Scale and Telescope.
3. Rigidity modulus – Torsional oscillation method (without symmetric masses).
4. Determination of Co-efficient of Viscosity – Graduated Burette method.
5. Surface Tension and Interfacial Tension – By drop weight method.
6. Specific Heat Capacity of a liquid – by Newton's Law of Cooling.
7. Sonometer – A.C. Frequency using steel wire.
8. Sonometer – Frequency of tuning fork.
9. Newton's Rings – Radius of Curvature.
10. Air Wedge – Determination of thickness of thin wire.
11. Spectrometer - Grating – Minimum Deviation – Mercury spectrum.
12. Spectrometer – Refractive Index of a liquid – Hollow Prism.
13. Potentiometer – Calibration of High Range Ammeter.
14. Potentiometer – Calibration of Low Range Voltmeter.
15. Determination of m and B_H using Deflection Magnetometer in Tan C position and vibration magnetometer.
16. Figure of merit and voltage sensitiveness of table galvanometer.

17. Construction of AND, OR gates using diodes and NOT gate by transistors.
18. Zener diode – Voltage Regulation.
19. NAND as universal gate.
20. NOR as universal gate.
21. De Morgan's theorems verification.

Books for study & reference:

1. A Text book of Practical Physics, M.N.Srinivasan, S.Balasubramanian and R.Renganathan, Sultan Chand & Sons, New Delhi, 2005.

C.C Ouseph, G.Rangarajan- A Text Book of Practical Physics- S. Viswanathan Publisher-Part I

Syllabus for All UG I year effective from the year 2018 - 2019						
Year:	I Year		**Subject Code:**	U18CES101	**Semester:**	I
Part IV	**Title:** Environmental Studies					
Credits:	2			Max. Marks. 75		

OBJECTIVES	To understand the environment around us and to conserve our nature.

Course Outcomes: At the end of the Course, the Students will able to	
CO1	Describe the available food and natural resources.
CO2	Explain the structure and functions of ecosystem
CO3	Elaborate the control of environmental pollution.
CO4	Analyze the social issues of human beings.

UNIT-I: INTRODUCTION TO ENVIRONMENTAL SCIENCES NATURAL RESOURCES: Environmental Sciences - Relevance - Significance - Public awareness - Forest resources - Water resources - Mineral resources - Food resources - conflicts over resource sharing - Exploitation - Land use pattern - Environmental impact - fertilizer - Pesticide Problems - case studies.

UNIT-II: ECOSYSTEM, BIODIVERSITY AND ITS CONSERVATION: Ecosystem - concept - structure and function - producers, consumers and decomposers - Food chain - Food web - Ecological pyramids - Energy flow - Forest, Grassland, desert and aquatic ecosystem. Biodiversity - Definition - genetic, species and ecosystem diversity - Values and uses of biodiversity - biodiversity at global, national (India) and local levels - Hotspots, threats to biodiversity - conservation of biodiversity - Insitu & Exsitu.

UNIT-III: ENVIRONMENTAL POLLUTION AND MANAGEMENT: Environmental Pollution - Causes - Effects and control measures of Air, Water, Marine, soil, solid waste, Thermal, Nuclear pollution and Disaster Management - Floods, Earth quake, Cyclone and Landslides. Role of individuals in prevention of pollution - pollution case studies.

UNIT-IV: SOCIAL ISSUES - HUMAN POPULATION: Urban issues - Energy - water conservation - Environmental Ethics - Global warming - Resettlement and Rehabilitation issues - Environmental legislations - Environmental production Act. 1986 - Air, Water, Wildlife and forest conservation Act - Population growth and Explosion - Human rights and Value Education - Environmental Health - HIV/AIDS - Role of IT in Environment and Human Health - Women and child welfare - Public awareness - Case studies.

UNIT-V: FIELD WORK: Visit to a local area / local polluted site / local simple ecosystem - Report submission

Suggested Readings:

1. KUMARASAMY, K., A. ALAGAPPA MOSES AND M. VASANTHY, 2004. ENVIRONMENTAL STUDIES, BHARATHIDSAN UNIVERSITY PUB, 1, TRICHY
2. RAJAMANNAR, 2004, ENVIRONEMNTAL STUDIES, EVR COLLEGE PUB, TRICHY
3. KALAVATHY, S. (ED.) 2004, ENVIRONMENTAL STUDIES, BISHOP HEBER COLLEGE PUB., TRICHY

C. ABDUL HAKEEM COLLEGE (Autonomous), Melvisharam

Syllabus for First year B.A.,B.Sc.,&B.Com (C.S) effective from the year 2018-2019

Class	: UG First year B.A.,B.Sc.,&B.Com (C.S)	Semester	: II
Subject Code	: U18FTA201	Title	: Part-I Tamil
Credits	: 4	Max Marks	: 75

OBJECTIVES	தமிழ் மொழியின் இலக்கிய, இலக்கணச் செழுமைகளைப் படைப்புகளின் வழி வெளிக்கொணர்தல்.
COURSE OUTCOME(S)	
CO1	காலம்தோறும் நிலவி வந்த அறம் சார் விழுமியங்களை அடையாளம் காணல். ஆளுமைகளின் அறிமுகத்தால் தன்னம்பிக்கை, விடாமுயற்சி, ஆளுமைத்திறன்களை விளக்கி எடுத்துரைத்தல்.
CO2	சமூகச் சீர்கேடு,பண்டைய அரச வரலாறு போன்றவற்றை விளக்கி,வாசிப்பையும் உச்சரிப்பையும் மேம்படுத்தல். திரைப் பாடல்கள் வழி நாட்டின் நிலைப்பாட்டை எடுத்துரைத்து தனி மனித சுயப் பண்புகளைப் பரிசோதித்தல்.
CO3	காலந்தோறும் தமிழ் இலக்கியங்களில் மாறுபடும் பாடுபொருள். வடிவம் முதலியவற்றை வரலாற்றின் வழி எடுத்துரைத்தல்.

பாடத்திட்டம்

அலகு - 1 நீதி இலக்கியங்கள்

1. திருக்குறள் - செய்ந்நன்றி அறிதல், நட்பு பிரிவாற்றாமை
2. நாலடியார் - தேர்ந்தெடுத்த 10 செய்யுள்
3. விவேக சிந்தாமணி - தேர்ந்தெடுத்த 7 செய்யுள்

அலகு - 2 வாழ்க்கை வரலாறு

1. நவாப். சி. அப்துல் ஹக்கீம்
2. டாக்டர். ஐடா ஸ்கடர்
3. டாக்டர் மு. வரதராசனார்

அலகு - 3 நாடகம்

1. பேரறிஞர் அண்ணா - வழக்கு வாபஸ்
2. ப. சங்கரலிங்கனார் - மானம் பெரிதே!
3. இன்குலாப் - மணிமேகலை (சிறை விடு கதை)

அலகு - 4 திரைத்தமிழ்

1. கண்ணதாசன்
   1. ஆறு மனம் - ஆறு மனமே ஆறு
   2. வாழ்க்கை - வாழ நினைத்தால் வாழலாம்
2. பட்டுக்கோட்டை கல்யாணசுந்தரம்
   3. விவசாயி - கடவுள் எனும் முதலாளி
   4. ஏழை ஏக்கம் - கையிலே வாங்கினேன்
3. வாலி
   5. பரிவு - புத்தன் காந்தி ஏசு
   6. பிரிவு - தரைமேல் பிறக்கவிட்டார்

அலகு - 5

(அ) இலக்கிய வரலாறு

1. நீதி இலக்கியங்கள்
2. நாடகம் தோற்றமும் வளர்ச்சியும்

(ஆ) திறனறிப் பயிற்சி

1. மரபுப் பெயர்கள் - அறிமுகம்
2. வழூஉச் சொற்கள் - அறிமுகம்
3. பிற மொழிச் சொற்களை நீக்குதல்
4. வடமொழிச் சொற்களை நீக்குதல்
5. விண்ணப்பம் எழுதுதல்

பார்வை நூல்கள்

1	இலக்கியச் சோலை	-	சி.அப்துல் ஹக்கீம் கல்லூரி வெளியீடு. 2018 சூன் வெளியீடு
2	கொடை வள்ளல் நவாப் சி.அப்துல் ஹக்கீம்	-	அப்துல் காதர் உலகத் தமிழாராய்ச்சி நிறுவனம்,சென்னை முதல் பதிப்பு,2015
3	வெற்றித்தூண்	-	ப.சங்கரலிங்கனார் என்.சி.பி.எச். அம்பத்தூர் சென்னை- 98 முதல் பதிப்பு -2013
4	மணிமேகலை நாடகம்	-	இன்குலாப் குமரன் பப்ளிஸர்ஸ், வடபழனி , சென்னை -26 முதல் பதிப்பு -2005
5	விவேக சிந்தாமணி	-	ஞா.மாணிக்கவாசகன் (உ.ஆ) உமா பதிப்பகம், சென்னை-001 ஆறாம் பதிப்பு – 2010
6	பட்டுக்கோட்டை கல்யாணசுந்தரம் பாடல்கள்	-	என்.சி.பி.எச். அம்பத்தூர் சென்னை- 98 பதினாறாவது பதிப்பு -2009
7	கண்ணதாசன் திரை இசைப் பாடல்கள்	-	கண்ணதாசன், வானதி பதிப்பகம்,தீனதயாளு தெரு, தி.நகர்,சென்னை -17 பன்னிரண்டாம் பதிப்பு – டிசம்பர் 2007
8	தமிழ் இலக்கிய வரலாறு	-	பேரா.மது.ச.விமலானந்தம் அபிராமி பதிப்பகம், இராயபுரம், சென்னை -13 மறு பதிப்பு -2002
9	நற்றமிழ் இலக்கணம்	-	டாக்டர்.சொ.பரமசிவம், பட்டுப் பதிப்பகம், 1269, 32-ஆம் தெரு அண்ணாநகர் மேற்கு, கம்பர் குடியிருப்பு, சென்னை -40 பன்னிரண்டாம் பதிப்பு -2012

Syllabus for all I Year UG Course effective from the year 2018-2019						
Year:	I Year		**Subject Code:**	U18FUR201	**Semester:**	II
Part I	**Title:** Urdu – II					
Credits:	4				**Max. Marks:** 75	

OBJECTIVES	✓ To enhance students' creative thinking. ✓ To trigger the literary skills dormant in them. ✓ To train them to advance their Translation Skills.
COURSE OUTCOME(S): On completion of the course, students will be able to	
COURSE OUTCOMES	➢ Students will be able to expand the frontiers of their creative intellect. ➢ Their fascination for Literature will get doubled or tripled. ➢ The translation skills will help them professionally.

Unit – I

1.NAGHMA-E-HASRATH – Akbar Allahbadi
2.MEER TAQI MEER - Hasthi Apni Habbab Ki Si Hai
3.KHAJA MEER DARD - Tohmaten Chand Apne Zimmz Dhar Chale

Unit – II

1.QAUMI GEETH – Allama Iqbal
2.SHAIK IBRAHIM ZAUQ - Layi Hayath Aaye Qaza Le Chali
3.MIRZA GHALIB - Dil Hi To Hai Na Sang Wa Khisht

Unit – III

1.NISAR MAIN TERI GALIYON KE– Faiz Ahmed Faiz
2.MOMIN KHAN MOMIN - Adam Mein Rehthe
3.JIGAR MURADABADE - Dil Gaya Ronaq Hayath Gayi

Unit – IV

1.WO NABION MEIN RAHMATH LAQAB PANE WALA- Masaddas Hali
2.FIRAQ - Sar Mein Souda Bhi Nahin
3.KAWISH BADRI - Az Sare Nav Fikr Ka Aaghaaz Karna Chahiye

4.A General Passage Translation from English to Urdu

Unit – V

1.TAJ MAHAL – Sahir Ludhyanwi

2.SHAKIR NAITHI - Shahid Maqsood Ek Din Rubaroo Ho Jayega
3.PARVEEN - Chalna Ka Hosala Naye

4.A General Passage Translation from English to Urdu

BOOK PRESCRIBED:

"ADAB-E-JAMEEL" Published by Dept. of Urdu, C. Abdul Hakeem College, Melvisharam.

Syllabus for B.A., / B.Sc., / B.Com., Corp. Sec. Course effective from the year 2018-2019						
Year:	I Year		**Subject Code:**	U18FEN201	**Semester:**	II
Part II	**Title:** English – II					
Credits:	4			**Max. Marks:** 75		

COURSE OUTCOME(S):	
CO1	Comprehend various forms of literature like Prose, Poetry, Biography, Short Story and Drama.
CO2	Develop the knowledge of grammatical system of English Language and also develop four Language Skills. (LSRW)

UNIT - I PROSE

1. The Eternal Silence of These Infinite Crowds — N.C. Chaudhari
2. Comfort — Aldous Huxley
3. The Challenge of Our Time — E.M. Foster
4. Words of Wisdom — Chetan Bhagat

UNIT – II POETRY

1. Kubla Khan — S.T. Coleridge
2. I Know Why the Caged Bird Sings — Maya Angelo
3. Punishment in Kindergarten — Kamala Das
4. The Unknown Citizen — W.H. Auden

UNIT - III SHORT STORIES

1. A Devoted Son — Anita Desai
2. A Cup of Tea — Katherine Mansfield

UNIT - IV ONE-ACT PLAY & BIOGRAPHY

1. Funeral Oration from Julius Caesar — William Shakespeare
2. Biography of Sir Syed Ahmed Khan

UNIT - V WARM UP

1. Lexical Skills:

1. One Word Substitutes
2. Correct Usage of words
3. Commonly misspelt words
4. Formation of plurals

2. Descriptive Grammar:

1. Articles and its kinds
2. Prepositions and its kinds
3. Pronouns
4. Kind of Pronouns
5. Verbs – Transitive and Intransitive Verbs

3. Traditional Grammar:

1. The Tenses- Introduction

   Past Tense

   (a) Simple Past Tense
   (b) Past Continuous Tense
   (c) Past Perfect Tense
   (d) Past Perfect Continuous Tense
2. Direct and Indirect Speech

4. Communication Skills (LSRW):

1. Offering a Suggestion
2. Asking For Advice
3. Persuading
4. Complimenting

5. Composition:

1. Electronic Mail
2. Body Language
3. Facing and Interview
4. Negotiating
5. Group Discussion

Prescribed Book: HALL OF FAME – II Board of Editors, Published by Emerald publishers, Egmore, Chennai – 600 008: www.emeraldpublishers.com, Mail: info@emeraldpubliser.com

Syllabus for I B.Sc. Mathematics effective from the year 2018-2019						
Year:	I Year		**Subject Code:**	U18MMA201	**Semester:**	II
Part III	**Title:** Algebra & Trigonometry – II					
Credits:	3			**Max. Marks:** 75		

CORE PAPER – 3

OBJECTIVES	Students are exposed to basis theories & simple application of algebra and trigonometry.

Course Outcomes: At the end of the course, the students will able to	
CO1	Identify the different types of a matrix and calculate eigen values and corresponding eigen vectors of a square matrix.
CO2	Define Euler function, compute the no. of divisors of positive integer highest power and apply Fermat's, Wilson's theorem to find the remainder of some composite numbers.
CO3	Show trigonometric functions in terms of hyperbolic functions and different identities of hyperbolic functions.
CO4	Define logarithm of a complex number and evaluate the summation of series when the angles are in A.P, C+iS and using method of difference.

ALGEBRA:

UNIT - I: MATRICES

Symmetric - Skew symmetric - Hermitian - Skew Hermitian - Orthogonal and Unitary matrices - Cayley-Hamilton theorem (without proof) - Eigenvalues - Eigenvectors - Similar matrices - Diagonalisation of a matrix.

Chapter: 6 (Omit: Rank, Consistency of linear equations) (Book 1)

UNIT - II: ELEMENTARY NUMBER THEORY

Prime number - Composite number - Decomposition of a composite number as a product of primes uniquely (without proof) - Divisors of a positive integer - Congruence modulo n - Euler function (without Proof) - Highest power of a prime number p contained in n! - Fermat's and Wilson's theorems (statements only) - simple problems.

Chapter: 5 (Full) (Book 1)

TRIGONOMETRY:

UNIT - III:

Hyperbolic functions - Relation between hyperbolic functions - Inverse hyperbolic functions.

Chapter: 7 (Full) (Book 2)

UNIT - IV:
Logarithm of complex numbers - Gregory series - Euler series.
Chapter: 8 (Full) & 9 (Full) (Book 2)

UNIT - V:
Summation of series: When the angels are in A.P, C+iS method of summation - Method of differences (Telescopic method).
Chapter: 10 (Full) (Book 2)

Recommended Text:

1. P.R.Vittal, V.Malini, Algebra, Analytical Geometry and Trigonometry, Margham Publications, Chennai.
2. P.R.Vittal (2004) Trigonometry, Margham Publications, Chennai.

Reference Books:

1. T.K.Manicavachagom Pillay, T.Natarajan and K.S.Ganapathy. (2004) Algebra, Volume I & II S.Viswanathan Printers & Publishers Pvt. Ltd. Chennai.
2. P.Kandasamy, K.Thilagavathy (2004), Mathematics for B.Sc. Vol-I, II, III & IV, S.Chand & Company Ltd., New Delhi-55.
3. A.Singaravelu (2003) Algebra and Trigonometry, Vol.-I Meenakshi Agency, Chennai.

Syllabus for I B.Sc. Mathematics effective from the year 2018-2019						
Year:	I Year		**Subject Code:**	U18MMA202	**Semester:**	II
Part III	**Title:** Integral Calculus & 3 - Dimensional Geometry					
Credits:	3				**Max. Marks:** 75	

CORE PAPER - 4

OBJECTIVES	This course aims to get acquire knowledge about integration and understand about the sphere, cone, cylinder.

Course Outcomes: At the end of the Course, the Students will able to	
CO1	Use Bernoulli and Reduction formulae to evaluate the single integrals.
CO2	Define Beta and Gamma functions and by applying Beta and Gamma functions to evaluate the different types of integrals.
CO3	Evaluate Multiple integrals (Double and triple)
CO4	Calculate the centre and radius of the sphere and to find the equation of the sphere, Cone, Cylinder, Right Circular cone and Right Circular cylinder.

INTEGRAL CALCULUS:

UNIT - I:

Bernoulli's formula - Reduction formulae: Types:
$\int x^n e^{ax} dx$, $\int \sin^m x \cos nx dx$, $\int x \sin^n x \, dx$,
$\int x^n \sin x \, dx$, $\int \sin^m x \cos^n x dx$, $\int \tan^n x dx$, $\int \cot^n x dx$, $\int x^m (1-x)^n dx$.
Beta and Gamma functions: Properties and simple problems.
Chapter: 11 (Book 1),
Chapter: 13 (Full) (Book 1)

UNIT - II:

Double integrals - Double integral in polar coordinates - Triple integrals - Change of order of integration.
Chapter: 17 (Book 1)

3-DIMENSIONAL GEOMETRY:

UNIT - III: Sphere

Section of a sphere by a plane - Tangent plane - Orthogonal spheres.
Chapter: 5 (Full) (Book 2)

UNIT - IV: Cone

Equation of a cone - Cone whose vertex is at the origin - Quadric cone with the vertex at the origin - Right circular cone.

Chapter: 6 (Full) (Book 2)

UNIT - V: Cylinder

Cylinder- Right circular cylinder.

Chapter: 7 (Full) (Book 2)

Recommended Text:

1. P.R.Vittal and V.Malini (2000) 3rd Revised Edition, Calculus, Margham Publication, Chennai.
2. P.R.Vittal (1999) 2nd Edition, Vector Analysis, Analytical Solid Geometry & Sequences and Series, Margham Publication, Chennai.

Reference Books:

1. S.Narayanan and T.K.Manicavachagam Pillay (2004) Calculus. S.Viswanathan Printers & Publishers Pvt. Ltd. Chennai.
2. Shanti Narayan (2001) Integral Calculus. S.Chand & Co. New Delhi.
3. T.K.Manickavachagom Pillay & others. (2004) Analytical Geometry (Two & Three Dimensions) S.Viswanathan Printers & Publishers Pvt. Ltd. Chennai.
4. P.Duraipandian and Laxmi Duriapandian (1975) Analytical Geometry-3 D, Emerald Publishers, Chennai.

Syllabus for I B.Sc. Mathematics effective from the year 2018-2019						
Year:	I Year		**Subject Code:**	U18MMAP21	**Semester:**	II
Part III	**Title:** Computational Techniques – I (Practical)					
Credits:	1				**Max. Marks:** 75	

CORE PRACTICAL-I

Objectives: This course aims to Solve Problems in Algebra and Calculus by using Matlab Software.

Course Outcomes: At the end of the Course, the Students can able to	
CO1	Apply MATLAB commands to compute certain algebraic expressions
CO2	Evaluate the differentiation of a function by using MATLAB command

List of Exercises:

1. Computing expressions
2. Evaluation of vectors, arrays
3. Symbolic logic and set theory
4. Permutation and combination
5. Differentiation

REFERENCES:

MATLAB MANUAL

Syllabus for B.Sc., Mathematics / Chemistry effective from the year 2018-2019						
Year:	I Year		**Subject Code:**	U18APH201	**Semester:**	II
Part III	**Title:** Physics -II (Allied)					
Credits:	4				**Max. Marks:** 75	

OBJECTIVES	To learn concise ideas in modern physics and their development.

Course Outcomes: At the end of the Course, the Students will able to	
CO1	To understand the concept of interference, phenomenon of diffraction and its applications
CO2	To learn the vector model, law of photoelectric emission and its applications
CO3	To study the nuclei properties, principles and working of different types of detectors, counters and accelerators.
CO4	To study the principles of fiber optics and the application of it in communication.
CO5	To understand the fundamental of diode and Fabrication of integrated circuits

Unit 1: Optics

Interference – air wedge – expression for the fringe width – experiment to measure the diameter of a thin wire – Diffraction – determination of wave length of light using transmission grating (normal incidence method) – Polarization – Double refraction – Nicol Prism - Optical activity- Specific rotatory power- Laurent's half shade polarimeter.

Unit 2: Atomic Physics

Vector Atom model – Quantum numbers associated with vector atom model – Pauli's exclusion principle – statement, explanation.

Matter waves - Dual Nature - De Broglie Waves –– Davisson and Germer's Experiment.

Photoelectric effect – Laws of photoelectric emission – Einstein's photoelectric equation – Millikan's experiment - Photoelectric cells.

Unit 3: Nuclear Physics

Nuclear fission – Energy released in nuclear fission – Bohr and Wheeler's theory – Chain reaction. Nuclear fusion – Carbon-Nitrogen cycle – Proton-Proton cycle – thermonuclear reactions – hydrogen bomb.

Particle accelerators - Betatron - Electron synchrotron - Detection Methods - Scintillation counter- Bubble chamber.

Unit 4: Applied Physics

Principle of fiber optics – acceptance angle - numerical aperture - classification of fibers - losses in fibers - Fiber optic communication system (Block diagram only).

Lasers - Components of Laser – Types of Laser- Semiconductor Laser – Applications.

Holography – Principle – Recording of hologram – Reconstruction of the Image – Properties – Applications.

Unit 5: Electronics

Zener diode – Characteristics – Voltage regulator – LED – Construction, working and uses.

Logic gates - AND, OR, NOT, NAND and NOR gates – NAND and NOR as universal gates – Fabrication of integrated circuits – monolithic process - LSI, MSI and VLSI – advantages and limitations of an integrated circuit.

Books for Study:

1. Allied Physics, R. Murugesan S. Chand & Co., (2005)
2. Optics and Spectroscopy , R.Murugesan and Kiruthiga Sivaprasath, S. Chand & Co
3. Modern Physics, R.Murugesan and Kiruthiga Sivaprasath, S. Chand & Co, (2012).
4. Principles of Electronics, V.K. Mehta and Rohit Mehta , S. Chand & Co, (2005).

Books for Reference:

1. College Physics Volume I and II, A.B. Gupta, Books and Allied (P) Ltd (2014).
2. A Textbook of Optics Dr. N.Subrahmanyam, Brij Lal and Dr. M.N. Avadhanulu, S. Chand & Co, (2014)
3. Basic Electronics Solid State, B.L. Theraja, S. Chand & Co, (2004)

Syllabus for III B.Sc. Mathematics effective from the year 2018-2019						
Year:	I		**Subject Code:**	U18AMA202	**Semester:**	II
Part III	**Title:** Numerical Methods - II					
Credits:	4			**Max. Marks:** 75		

Objectives: This course covers the techniques of Numerical Differentiation and Numerical Integration. It also deals with solution of difference equations, Algebraic and Transcendental equations and Numerical solution of Ordinary differential equations of first order.

Course Outcomes: At the end of the Course, the Students will able to	
CO1	Compute the value and derivative of a function at a point in the given intervals by using Trapezoidal rule, Simpson's rule and Weddle's rule
CO2	Solve linear difference equations and to find particular integrals.
CO3	Evaluate the approximate value of the definite integral by utilizing Bisection method, Regula-falsi method and Newton-Raphson Method.
CO4	Identify the numerical solution of the first order ordinary differential equations.

UNIT-I: Numerical Differentiation

Newton's forward and backward differences to compute derivatives-derivative using divided differences formula-maxima and minima using the above formulae.

UNIT-II: Numerical Integration

General Quadrature formula-Trapezoidal rule-Simpson's one third rule-Simpson's three-eight rule, Weddle's rule- Euler-Maclaurin Summation Formula

UNIT-III: Difference Equations

Linear differences equations-Linear homogeneous difference equation with constant co-efficient-Particular integrals for ax, xm, sinax, cosax and ax f(x).

UNIT-IV: Solution of Algebraic and Transcendental Equations

Bisection method-Iteration method-Regula-falsi method (False Position Method)-Newton-Raphson Method.

UNIT-V: Numerical Solution of Ordinary Differential Equations (First order only)

Euler's method- Euler's modified method-Picard's method - Taylor's methods-Runge-Kutta method (Fourth order only).

Recommended Text

1. B.D. Gupta. (2001) Numerical Analysis.Konark Pub. Ltd., Delhi
2. M.K.Venkataraman. (1992) Numerical methods for Science and Engineering

National Publishing Company, Chennai.

Reference Books

1. Gupta-Malik, Calculus of finite differences and numerical Analysis,
Krishba Prakashan Mandir, Meerut Seventh Edition.
2. S. C. Saxena, Calculus of finite differences and Numerical Analysis, S. Chand & Co., New Delhi. IX Edition.
3. A. Singaravelu, Numerical methods, Meenakshi Publications-First Edition 1992.
4. P. Kandasamy, K. Thilagavathy (2003) Calculus of Finite Difference & Numerical Analysis, S. Chand& Company Ltd., New Delhi-55.

Syllabus for B.Sc., Mathematics / Chemistry effective from the year 2018-2019						
Year:	I Year		**Subject Code:**	U18APHP21	**Semester:**	II
Part III	**Title:** Physics -I (Allied Practical)					
Credits:	2				**Max. Marks:** 75	

OBJECTIVES	• To learn the techniques of handling simple measuring instruments in physics • To measure certain basic mechanical, optical, electrical and magnetic properties of matter. • To study the characteristics of diode, transistor and ICs and their usage.

Course Outcomes: At the end of the Course, the Students will able to	
CO1	understand and evaluate the young's modulus and Rigidity modulus of the given material
CO2	understand the principles of optics through air wedge and spectrometer experiments
CO3	Construct a voltage regulation using zener diodes
CO4	remember the functions of logic gates.
CO5	understand and analyze the characteristics of various diodes
CO6	Skill Development-Practical exposure

(Any 15 Experiments)

22. Young's modulus – non uniform bending – pin and microscope.
23. Rigidity modulus – Static Torsion Method Using Scale and Telescope.
24. Rigidity modulus – Torsional oscillation method (without symmetric masses).
25. Determination of Co-efficient of Viscosity – Graduated Burette method.
26. Surface Tension and Interfacial Tension – By drop weight method.
27. Specific Heat Capacity of a liquid – by Newton's Law of Cooling.
28. Sonometer – A.C. Frequency using steel wire.
29. Sonometer – Frequency of tuning fork.
30. Newton's Rings – Radius of Curvature.
31. Air Wedge – Determination of thickness of thin wire.
32. Spectrometer - Grating – Minimum Deviation – Mercury spectrum.
33. Spectrometer – Refractive Index of a liquid – Hollow Prism.
34. Potentiometer – Calibration of High Range Ammeter.
35. Potentiometer – Calibration of Low Range Voltmeter.
36. Determination of m and B_H using Deflection Magnetometer in Tan C position and vibration magnetometer.
37. Figure of merit and voltage sensitiveness of table galvanometer.

38. Construction of AND, OR gates using diodes and NOT gate by transistors.
39. Zener diode – Voltage Regulation.
40. NAND as universal gate.
41. NOR as universal gate.
42. De Morgan's theorems verification.

Books for study & reference:

2. A Text book of Practical Physics, M.N.Srinivasan, S.Balasubramanian and R.Renganathan, Sultan Chand & Sons, New Delhi, 2005.

C.C Ouseph, G.Rangarajan- A Text Book of Practical Physics- S. Viswanathan Publisher-Part I

Syllabus for All UG I year effective from the year 2018 - 2019						
Year:	I Year		**Subject Code:**	U18CSS201	**Semester:**	II
Part IV	**Title:** Soft Skills					
Credits:	1				Max. Marks. 75	

COURSE OUTCOME(S):	
CO1	Effectively communicate through verbal / written communication and also improve the listening skills.
CO2	Actively participate in Group Discussion / Meetings / Interviews and prepare and deliver presentations.

UNIT I

1. Ability to listen and document what you have heard
2. Reading and comprehension

UNIT II

3. Ability to read and follow instructions
4. Ability to interpret and transcode information

UNIT III

5. Asking for and responding to information
6. Communication skills with public, fellow employees, supervisors and customers

UNIT IV

7. Spelling and Grammar
8. Ability to fill out a job application

UNIT V

9. Expressing courtesy

10. General and Individual Traits:

(a) Honesty
(b) Reliability
(c) Good Attitude
(d) Common Sense

Prescribed Book: Basic Soft skills for Under Graduate, Board of Editors, Published by Emerald publishers, Egmore, Chennai – 600 008: www.emeraldpublishers.com, Mail: info@emeraldpubliser.com

=

Syllabus for All UG I year effective from the year 2018 - 2019						
Year:	I Year		**Subject Code:**	U18CVE201	**Semester:**	II
Part IV	Title: **Value Education**					
Credits:	2			Max. Marks. 75		

OBJECTIVES	To understand human values and ethical issues
COURSE OUTCOME(S): At the end of course, the students shall able to	
CO1	Describe the basic concept of human values.
CO2	Explain the structure and responsibility of families
CO3	Elaborate the human ethical relationships.
CO4	Analyze the modern welfare and globalization.

UNIT-I : Value Education - Definition - relevance to present day - Concept of Human Values - self introspection - Self-esteem.

UNIT-II: Family values - Components, structure and responsibilities of family - Neutralization of anger - Adjustability - Threats of family life - Status of women in family and society - Caring for needy and elderly - Time allotment for sharing ideas and concerns.

UNIT-III: Ethical values - Professional ethics - Mass media ethics - Advertising ethics - Influence of ethics on family life - psychology of children and youth - Leadership qualities - Personality development.

UNIT-IV: Social values - Faith, service and secularism - Social sense and commitment - Students and Politics - Social awareness, Consumer awareness, Consumer rights and responsibilities - Redressal mechanisms.

UNIT-V: Effect of international affairs on values of life / Issue of Globalization - Modern warfare - Terrorism. Environmental issues - mutual respect of different cultures, religions and their beliefs.

Suggested Readings

1. T. Anchukandam and J. Kuttainimathathil (Ed) Grow Free Live Free, Krisitu Jyoti Publications, Bangalore (1995)
2. Mani Jacob (Ed) Resource Book for Value Education, Institute for Value Education, New Delhi 2002.
3. DBNI, NCERT, SCERT, Dharma Bharti National Institute of Peace and Value Education, Secunderabad, 2002.
4. Daniel and Selvamony - Value Education Today, (Madras Christian College, Tambaram and ALACHE, New Delhi, 1990)
5. S. Ignacimuthu - Values for Life - Better Yourself Books, Mumbai, 1991.
6. M.M.M.Mascaronhas Centre for Research Education Science and Training for Family Life Promotion - Family Life Education, Bangalore, 1993

C. ABDUL HAKEEM COLLEGE (Autonomous), Melvisharam

Syllabus for Second year B.A.,B.Sc.,&B.Com (C.S) effective from the year 2018-2019

Class	: UG Second year B.A.,B.Sc.,&B.Com (C.S)	Semester	: III
Subject Code	: U18FTA301	Title	: Part-I Tamil
Credits	: 4	Max Marks	: 75

OBJECTIVES	தமிழ்மொழியிலுள்ள பண்பு, பழமை, சிறப்பு, வடிவம், இலக்கண முறைமை போன்றவற்றை வெளிக்கொணர்தல்.
COURSE OUTCOME(S)	
CO1	தமிழில் உள்ள காப்பிய இலக்கியங்களையும் கதை வழி வாழ்வியலையும் அறிய வைத்தல். நெடுங்கவிதைகளைப் பயிற்றுவிப்பதன் மூலம் நவீன திறனாய்வு முறைகளில் ஈடுபட துணை நிற்றல்.
CO2	உரைநடையின் அடிப்படைத் திறனையும் பிழையின்றி எழுதும் முறையையும் சமூக உண்மைகளையும் நிலைநாட்டல். இலக்கணத்தைப் பயிற்றுவிப்பதன் மூலம் சிறந்த மொழியாக்க முயற்சிக்கு ஆயத்தப்படுத்தல்.
CO3	காலந்தோறும் தமிழ் இலக்கியங்களில் மாறுபடும் பாடுபொருள். வடிவம் முதலியவற்றை இலக்கிய வரலாற்றின் வழி பயிற்றுவித்தல்.

பாடத்திட்டம்

அலகு–I காப்பியம்

1. சிலப்பதிகாரம் - கனாத்திறம் உரைத்த காதை (முழுவதும்)
2. மணிமேகலை - ஆபுத்திரன் திறம் அறிவித்த காதை (முழுவதும்)
3. சீவக சிந்தாமணி - விமலையார் இலம்பகம் (தேர்ந்தெடுத்த 20 பாடல்கள்)

அலகு–II புதுக்காவியம்

1. பாரதிதாசன் - சஞ்சீவி பர்வதத்தின் சாரல் (முழுவதும்)
2. துறவி - நளவெண்பா - கலி நீங்கு காண்டம் - 'நீங்கினான் கலி'

அலகு–III உரைநடை

1. கலைஞர் மு.கருணாநிதி - சிந்தனையும் செயலும் - அழுக்காறு, ஒழுக்கம்
2. தொ.பரமசிவம் - விடுபூக்கள் - 'சமூக வரலாற்றுப் பார்வையில் திருவிழாக்கள்'
3. சுகி.சிவம் - வாழப் பழகுவோம் - 'மனம் போல வாழ்வு'

அலகு–IV இலக்கணம்

1. **எழுத்து** - முதல், சார்பெழுத்துக்கள் **சொல்** - பகுபத உறுப்புகள், ஆகுபெயர் , வழக்கு **அணி** – உவமை, உருவகம், சொற்பொருள், தற்குறிப்பேற்றம், எடுத்துக்காட்டு உவமை.

அலகு–V (அ) இலக்கிய வரலாறு

1. ஐம்பெருங்காப்பியங்கள், ஐஞ்சிறுகாப்பியங்கள்
2. உரைநடை தோற்றமும் வளர்ச்சியும்

(ஆ) திறனறிப் பயிற்சி

1. அலுவலகக் கடிதங்கள்,
2. அறிக்கை மற்றும் செய்தி எழுதுதல்

பார்வை நூல்கள்

1	இலக்கியச் சாரல்	-	சி.அப்துல் ஹக்கீம் கல்லூரி வெளியீடு. 2019 சூன் வெளியீடு
2	சிந்தனையும் செயலும்	-	கலைஞர் மு.கருணாநிதி பூம்புகார் பதிப்பகம்,127,பிராகசம் சாலை,சென்னை -18 நான்காம் பதிப்பு -2017
3	விடுபூக்கள்	-	தொ.பரமசிவம் மணி பதிப்பகம், 29ஏ, யாதவர் கீழத் தெரு, பாளையங்கோட்டை. மூன்றாம் பதிப்பு -2016
4	வாழப் பழகுவோம் வாருங்கள்	-	சுகி.சிவம் வானதி பதிப்பகம், 13, தீனதயாளு தெரு, தி.நகர், சென்னை. மூன்றாம் பதிப்பு -2003
5	வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு	-	முனைவர் பாக்யமேரி என்.சி.பி.எச்., அம்பத்தூர், சென்னை -98 முதல் பதிப்பு -2008
6	நற்றமிழ் இலக்கணம்	-	டாக்டர்.சொ.பரமசிவம், பட்டுப் பதிப்பகம், 1269, 32-ஆம் தெரு அண்ணாநகர் மேற்கு, கம்பர் குடியிருப்பு, சென்னை -40 பன்னிரண்டாம் பதிப்பு -2012

Syllabus for B.A., / B.Sc., / B.Com., (CS) effective from the year 2019-2020						
Year:	II Year		**Subject Code:**	U18FUR301	**Semester:**	III
Part I	**Title:** Urdu – III					
Credits:	4			**Max. Marks:** 75		

OBJECTIVES:	✓ To arouse interest for Non-Detailed Texts. ✓ To equip them with ample knowledge to pen their own articles. ✓ To instill in them a flair for translation.
COURSE OUTCOMES	➢ Students will care more for Non-Detailed Texts on par with Detailed Texts. ➢ They will sharpen necessary skills to draft essays on varied themes. ➢ They will succeed in their official routine with their ability to translate.

AFSANA, MAZMOON NAWESI & MUKALAMA NIGARI

Unit – I

1.KAFAN – Prem Chand
2.JAMUN KA PED – Krishan Chander

Unit – II

1.KHUSH NASEEB – Ali Akbar Amburi
2.DARD KA EHSAS – Ameerunnisa

Unit – III

1.BHOLA – Rajender Singh Bedi
2.NAYA QANOON – Saadath Husain Manto

Unit – IV

1.NOOR-O-NAR – Ali Abbas Hussani
2.AAKHR PAISA BACH HI GAYA – B.S.Ramaiya

Unit – V

1. Guldasta-E-Mazameen-O-Insha Pardazi By **Mohammed Arif Khan**
2. A General Passage for Translation From Urdu To English

BOOK PRESCRIBED:

"ADAB-E-JAMEEL" Published by Dept. of Urdu, C. Abdul Hakeem College, Melvisharam.

Syllabus for B.A., / B.Sc., / B.Com., (CS) effective from the year 2019-2020						
Year:	II Year		**Subject Code:**	U18FEN301	**Semester:**	III
Part II	**Title:** English – III					
Credits:	4			**Max. Marks:** 75		

COURSE OUTCOME(S):	
CO1	Recognize the various forms of literature like Prose, Poetry, Biography, Short Story and Drama.
CO2	Describe the knowledge of grammatical system of English Language and also develop four Language Skills.(LSRW)

UNIT - I **PROSE**

5. Futurology — Aldous Huxley
6. Engine Trouble — R. K. Narayan
7. I have a Dream — Martin Luther King
8. Function of Education — J Krishnamurthi

UNIT – II **POETRY**

5. Poor Girl — Maya Angelou
6. Solitary Reaper — William Wordsworth
7. The Tyger — William Blake
8. My Grand Mother's House — Kamala Das

UNIT - III **SHORT STORIES**

2. The Last Leaf — O' Henry
3. Sparrows — K Ahmed Abbas

UNIT - IV **ONE-ACT PLAY& BIOGRAPHY**

1. The Proposal — Anton Chekov
2. Father Damien — G. F. Lamb

UNIT - V **WARM UP**

1. Lexical Skills
2. Descriptive Grammar
3. Traditional Grammar
4. Communication Skills (LSRW)

5. Composition

WARM UP

1. **Lexical Skills**
   - Foreign Words and Special Terminology
   - Building Vocabulary (Affixes)
   - Phrasal Verbs
   - Idioms and Phrases
2. **Descriptive Grammar**
   - Adjectives
   - Kinds of Adjectives
   - Adverb
   - Kinds of Adverbs
   - Participles, Gerund & Infinitive
3. **Traditional Grammar**
   - The Tenses – Introduction
   - Future Tense – Simple Future Tense, Future Continuous Tense, Future Perfect Tense & Future Perfect Continuous Tense.
   - Degrees of Comparison
4. **Communication Skills (LSRW)**
   - Expressing Sympathy
   - Expressing Gratitude
   - Complaining
   - Apologizing
5. **Composition**
   - Public speaking
   - Seminar
   - Writing a Memorandum
   - Expansion of Proverbs

Books Prescribed:

HALL OF FAME – III Board of Editors, Published by Emerald publishers, Egmore, Chennai – 600 008: www.emeraldpublishers.com, Mail: info@emeraldpubliser.com

Syllabus for II B.Sc. Mathematics effective from the year 2018-2019						
Year:	II Year		**Subject Code:**	U18MMA301	**Semester:**	III
Part III	**Title:** Differential Equations					
Credits:	4				**Max. Marks:** 75	

CORE PAPER – 5

Objectives: To study logical skills in the formation of differential equations, to expose to different techniques of finding solutions to these equations and in addition stress is laid on the application of these equations in geometrical and physical problems.

At the end of the course the student will be able to	
CO1	Identify whether the given ODE is exact or not and solve equation of first order, first degree and higher degree.
CO2	Apply the method of variation of parameters, to solve some special types of Ordinary differential equations with constant coefficients, and solve Cauchy's and Legendre linear ordinary differential equation.
CO3	Define Laplace Transforms, Inverse Laplace Transforms, and using Laplace transform to solve ordinary differential equations.
CO4	Construct the PDE by eliminating arbitrary constants, arbitrary functions and solve different types of nonlinear PDE's.

UNIT-I: Ordinary Linear Differential Equations

Bernoulli Equation – Exact Differential Equations – Equations Reducible to Exact Equations – Equations of First order and Higher degree: Equations solvable for p, Equation solvable for x and Equations Solvable for y – Clairaut's Equation.

Chapter 11: 11.10 to 11.14.

UNIT-II: Ordinary Linear Differential Equations [Contd...]

Method of Variation of Parameters – Method of Undetermined Coefficients – Equations reducible to Linear equations with constant coefficients – Cauchy's homogeneous Linear Equations – Legendre's Linear Equations.

Chapter 13: 13.8, 13.9(Full)

UNIT-III: Differential Equations of Other Types

Equations of form $d^2y/dx^2 = f(x)$ – Equations of the form $d^2y/dx^2=f(y)$ – Equations which do not contain y – Equations which do not contain x – Total Differential Equations– Equations of the form $\frac{dx}{P} = \frac{dy}{Q} = \frac{dz}{R}$ - Method of Grouping and method of multipliers.

Chapter 15: 15.2 to 15.5, 15.8 and 15.10 (Omit 15.9).

UNIT-IV: Laplace Transform

Laplace Transform - Inverse Laplace Transform – Properties – Application of Laplace Transform to solution of first and second order Linear Differential equations (with constant coefficients) and simultaneous Linear Differential Equations.

Chapter: 7(Full)

UNIT-V: Partial Differential Equations

Formation of PDE –– Solutions of PDE - Equations Solvable by direct Integration – Linear Equations of the first order – Non-linear Equations of the first Order Types:

f (p, q) = 0, f(z, p, q)=0, f(x, q)= f(y, p), z= p x + q y + f(p, q).

Chapter 17: 17.2 to 17.6

Recommended Books:

For Units 1,2,3 and 5, Refer:

B.S.Grewal [2002] Higher Engineering Mathematics, Khanna Publishers, New Delhi.

For Unit 4, Refer:

P.R.Vittal [2006] Differential Equations, Fourier and Laplace Transforms, Probability, Margham Publications, Chennai-17.

Reference Books:

1. Sheply L.Ross, [1984] Differential Equations, III Edition John Wiley & Sons, New York.
2. M.D. Raisinghania, [2001] Ordinary and Partial Differential Equations, S.Chand and Co., New Delhi.
3. P.Kandasamy, K.Thilagarathy [2004] Mathematics for B.Sc. Vol. III S.Chand & Co., Ltd., New Delhi-55.
4. S.Narayanan & T.K.Manicavachagom Pillay [2004] Calculus S.Viswanathan printers & Publishers Pvt. Ltd., Chennai.

Syllabus for II B.Sc. Mathematics effective from the year 2018-2019						
Year:	II Year		**Subject Code:**	U18MMAP31	**Semester:**	III
Part III	**Title:** Computational Techniques – II (Practical)					
Credits:	1			**Max. Marks:** 75		

CORE PRACTICAL – II

Objectives: This course aims to Solve Problems in Algebra and Calculus by using MATLAB Software.

Course Outcomes: At the end of the Course, the Students can able to	
CO1	Calculate extreme values of functions of one and two variables.
CO2	Solve non homogeneous linear equations by Matrix Inversion method

List of Exercises:

1. Maxima and minima
2. Basic arithmetic
3. Matrices
4. Solution to non-homogeneous linear equations using matrices
5. Symbolic integration

REFERENCES:

MATLAB MANUAL

Syllabus for B.Sc., Mathematics & Physics effective from the year 2019-2020						
Year:	II Year		**Subject Code:**	U18ACH301	**Semester:**	III
Part III	**Title:** Chemistry -I (Allied)					
Credits:	4			**Max. Marks:** 75		

Objective	To study the various techniques of extraction of metals, basic concepts of polarization effects, fundamentals of kinetics, catalysis, photochemistry and importance of industrial chemistry.
Course Outcome(s)	
CO1	Explain the basic principles of extraction of metals
CO2	Discuss the various concepts of Cycloalkanes, Polarization effects and Stereo isomerism.
CO3	Describe the fundamentals of Kinetics, Catalysis and Photochemistry
CO4	Distinguish the conventional and non-conventional energy resources
CO5	Identify the uses of naphthalene, osmosis and nuclear chemistry

UNIT - I: INORGANIC CHEMISTRY - I

1.1 Extraction of Metals - Minerals and Ore - Minerals of Iron and Copper - Ore dressing - Froth floatation and Magnetic separation.

1.2 Refining of metals - Electrolytic, Van Arkel and Zone Refining.

1.3 Extraction of Uranium and Thorium.

UNIT - II: ORGANIC CHEMISTRY - I

2.1 Cycloalkanes - Preparation and properties of Cyclohexane - Bayer's angle strain theory.

2.2 Polarization - Inductive effect, mesomeric effect and steric effect.

2.3 Stereo isomerism - Types, causes of optical activity of lactic acid and tartaric acid - Racemisation - Resolution – Geometrical Isomerism – maleic and fumaric acid.

UNIT - III: PHYSICAL CHEMISTRY - I

3.1 Chemical kinetics – Distinction between Order and Molecularity – derivation of first order rate equation – half life period of first order reaction.

3.2 Catalysis – Catalyst - Types - promoters – catalytic poisoning – Active center – Distinction between homogeneous and heterogeneous catalysts – Industrial application of catalysts.

3.3 Photochemistry - Grothus Draper's law, Stark Einstein's law – quantum yield. Phosphorescence, fluorescence, chemiluminescence and photosensitization.

UNIT - IV: INDUSTRIAL CHEMISTRY

4.1 Conventional Energy Resources - Fuels – Classifications - Calorific value – Coal – Classification (Peat, Lignite, Bituminous and Anthracite).

4.2 Crude oil – Petroleum Refining – Cracking – thermal and catalytic cracking - Applications of Cracking – Knocking – Octane Number and Cetane Number.

4.3 Non- Conventional Energy Resources –Solar Energy - Need – Thermal Conversion (Solar Heater) and Electrical Conversion (Solar Cell) – Wind Energy – Tidal Energy – Bio-fuels.

UNIT - V: INDUSTRIAL CHEMISTRY AND NUCLEAR CHEMISTRY

5.1 Naphthalene – Preparation properties and uses of naphthalene – Structure of Naphthalene.

5.2 Osmosis – Osmotic pressure – reverse osmosis – desalination of sea water.

5.3 Nuclear chemistry – definition of half life period – Group displacement law – Radioactive series – Nuclear fission and fusion – Nuclear Reactor – Application of nuclear chemistry in medicine, agriculture and industries – C14 dating.

Books for Study:

1. B. R. Puri, L. R Sharma and K.C Kalia, **Principles of Inorganic Chemistry**, 33rd Edition, Vishal Publishing Co. Jalandhar- Dehli.
2. B.S Bahl and Arun Bahl, **Advanced Organic Chemistry**, Sultan Chand and Co., Ltd, Reprint 2010.
3. B. R. Puri, L. R Sharma and M.S Pathania, **Principles of Physical Chemistry**, Edition, Vishal Publishing Co., 2018.

4. B.K. Sharma, **Industrial Chemistry – Including Chemical Engineering,** Goel Publishing House, Meerut. 2008,

Books for Reference:

1. P.L Soni and Mohan Katyal, **Textbook of Inorganic Chemistry,** 20th Edition, Sultan Chand & Sons, Reprint 2001.
2. P.L Soni and H.M Chawla, **Textbook of Organic Chemistry,** 25th Revised Edition, Sultan Chand & Sons, 1992.
3. K.S Tewari and M.K Vishnoi, **A Textbook of Organic Chemistry,** 3rd Edition, Vikas Publishing House Pvt. Ltd, 2006.
4. M.K Jain and S.C Sharma, **Modern Organic Chemistry,** Vishal Publishing Co, 2004.
5. P.L Soni, O.P Dharmarha and U.N Dash, **Textbook of Physical Chemistry,** 21st Revised Edition, S. Chand & Co, Reprint 2000.
6. P.K Mani and A.O Thomas, **A Textbook of Practical Chemistry,** Scientific Publication, 1973.

O.P. Pandey, D. N. Bajpai and S.Giri, **Practical Chemistry,** 8th Edition, S. Chand & Co, 2001.

Syllabus for B.Sc., Mathematics & Physics effective from the year 2019-2020						
Year:	II Year		**Subject Code:**	U18ACHP41	**Semester:**	III
Part III	**Title:** Chemistry -I (Allied Practical)					
Credits:	0				**Max. Marks:** 00	

OBJECTIVES	This course aims to study about linear programming problem and simulation by using various techniques.

Course Outcomes: At the end of the Course, the Students will able to	
CO1	Determine the amount of unknown substances by volumetric analysis.
CO2	Develop skills required to analyze organic compounds qualitatively.

PART I

Volumetric Analysis

Students must write the short procedure and calculations for the given estimation in the examination.

Acidimetry and Alkalimetry

1. Estimation of Hydrochloric acid using standard Sulphuric acid solution.
2. Estimation of Sodium Hydroxide using standard Hydrochloric acid solution.
3. Estimation of Borax using standard Sodium Carbonate solution.
4. Estimation of Oxalic acid using standard Sulphuric acid solution.

Permanganometry

1. Estimation of $FeSO_4$ using standard Mohr salt solution.
2. Estimation of Oxalic acid using standard ferrous sulphate solution.

Dichrometry

1. Estimation of $K_2Cr_2O_7$ using standard Potassium Dichromate solution.
2. Estimation of Fe^{2+} using diphenylamine / N-phenyl anthranilic acid as an indicator.

Complexometry

1. Estimation of Copper using standard Copper Sulphate solution.
2. Estimation of Total Hardness of water using Ethylene diammine tetra acetic acid.

PART II

Organic Qualitative Analysis

Systematic analysis of the following Organic compounds containing one functional group and their characterization using confirmatory tests.

- ✓ Aromatic aldehyde - Benzaldehyde
- ✓ Carbohydrate
- ✓ Carboxylic acid (mono and dicarboxylic acid)
- ✓ Phenol
- ✓ Aromatic primary amine
- ✓ Amide
- ✓ Diamide

Semester Examination	**Marks**	**Internal Assessment**	**Marks**
Volumetric Analysis	40	Two Tests	10
Organic Analysis	30	Attendance / Regularity	10
Record	05	Results accuracy	05
Total	**75**	**Total**	**25**

Error Calculation for Volumetric Analysis

Error	**Marks**
< 2%	40
> 2 - < 3%	30
> 3 - < 4 %	20
> 4 - < 5 %	10
> 5 %	5

Systematic Organic Qualitative Analysis: 30 Marks

Procedures	**Marks**
Aliphatic/Aromatic	6
Saturated/Unsaturated	6
Elements Present / Absent	12
Functional group	6
Total	**30**

Syllabus for B.Sc., Chemistry effective from the year 2019-2020						
Year:	II Year		**Subject Code:**	U18ACH302	**Semester:**	III
Part III	**Title:** Biochemistry -I (Allied)					
Credits:	4			**Max. Marks:** 75		

Objective	The main objectives of this course is intended to provide a basic foundation and understanding of the principles of modern biochemistry necessary for further work in the biochemical/biomedical areas. Knowledge and understanding of the basic principles in biochemistry including the molecular composition of living cells, the organization of biological molecules within the cell, and the structure and function of these biological molecules with some practical connections to everyday life.
Course Outcome(s)	
CO1	Acquire fundamental knowledge of delineate structure, function and inter-relationships of carbohydrates.
CO2	Gain the knowledge of structure and biological functions of amino acids and proteins.
CO3	Understand the concepts of structure and biological functions of various lipids and the difference between simple and complex lipids.
CO4	Understand the basic concepts of Structures, functions, difference and formation and their significance DNA and RNA.
CO5	Know the concept of body regulators- Vitamins and minerals.

UNIT-I: Chemistry of carbohydrates

General Functions, Classification and Structure of Glucose - features and Haworth Projection. Stereoisomers, chemical reactions of monosaccharide, oxidation, reduction, action of alkali, strong acid, osazones formation. Disaccharides - Occurrence and structure of maltose, lactose, sucrose. Polysaccharides- structure and functions of starch.

UNIT-II: Chemistry of Amino acids and Proteins

Amino acid structure- D & L forms of amino acids. Classification based on polarity, essential and non essential amino acid. Physical properties: Zwitter ions, pI, ampholytes of amino acids, UV absorption and chemical properties. Protein classification, functions, structural

organization - Primary structure, Secondary structure-alpha helix and beta sheet. Denaturation of protein.

UNIT-III: Chemistry of Lipids

Classification and general functions of lipids Fatty acids saturated and unsaturated, clinical significance of PUFA. Simple lipids, Triglycerides. Definition and significance - Acid Number, Saponification Number, Iodine Number and Reichert- Meissel Number. Compound lipids - Structure and function of Glycerophospholipids (Cephalin, Lecithin and Phosphotidyl inositol), Phosphosphingolipids (ceramide, Sphingomyeline), Glycolipids or Cerebrosides (Galacto and Glucocerebrocides). Steroids - Cholesterol structure and biochemical significance.

UNIT-IV: Chemistry of Nucleic acids

Definition, nucleoside, nucleotide and polynucleotide. Double helical model of DNA and its biological functions. Structure and biological functions of RNA Differences between DNA and RNA. DNA replication, transcription and translation process.

UNIT-V: Vitamins and Minerals:

A brief outline of occurrence and biological function of Vitamins and minerals (Na, K, Cl, Ca, P, I, Fe, Mg & S).

REFERENCES:

1. Lehninger Principles of Biochemistry-David L. Nelson, Michael M. Cox, Macmillan Worth Publishers.
2. Biochemistry - Garrett Grishmam. 3rd edition. International student's edition.
3. Biochemistry by L . Veerakumari , MJP publishers,Chennai-5.
4. Harper's Biochemistry-Rober K. Murray, Daryl K. Grammer, McGraw Hill, Lange Medical Books. 25th edition.
5. Fundamentals of Biochemistry-J.L. Jain, Sunjay Jain, Nitin Jain, S. Chand & Company.
6. Biochemistry-Dr. Amit Krishna De, S. Chand & Co., Ltd.
7. Biochemistry-Dr. Ambika Shanmugam, Published by Author.
8. Biomolecules-C.Kannan , MJP Publishers,Chennai-5.
9. Biophysical Chemistry - Upadhyay and Upadhyay Nath, Himalayan Publication.
10. Analytical Biochemistry - R.B. Turner, Elsevier, N.Y.

Syllabus for B.Sc., Chemistry effective from the year 2019-2020						
Year:	II Year		**Subject Code:**	U18ACHP42	**Semester:**	III
Part III	**Title:** Biochemistry -I (Allied Practical)					
Credits:	0				**Max. Marks:** 00	

Objective(s):	The main objectives of these experiments to support theoretical co and clinical diagnosis.
Course outcome	
Volumetric Analysis	To develop skills for quantitative estimation using the different branches of volumetric Analysis.
Qualitative Organic Analysis	To develop skills required for the qualitative analysis of organic compounds, determination of physical constants.
Preparations	To make use of conventional techniques/instruments to perform biochemical analysis.

Volumetric Estimation:

1. Estimation of Iron in Ferrous Ammonium Sulphate using potassium permanganate as link solution and oxalic acid as primary standard.
2. Estimation of Glucose by Benedict's quantitative method.
3. Estimation of Glycine by formal titration.
4. Estimation of ascorbic acid by titrimetric method using 2, 6-dichlorophenol indophenol.
5. Determination of saponification value of edible oil.

Qualitative analysis:

1. Identification of biomolecules - Amino acids, proteins, carbohydrates, lipids and nucleic acids.
2. Qualitative tests for Amino acids and proteins (Million's , Ninhydrin, Xanthoproteic and Biuret test)
3. Qualitative tests for lipids a) Miscibility test b) Saponification test c) Unsaturation test d) Sudan black dye test e) Salkowski test for cholesterol
4. Qualitative tests for DNA (DPA) & RNA (Orcinol) (Neumann's test for presence of phosphorus)

Preparation:

1. Casein from milk
2. Starch from potato.
3. Albumins and globulins from egg white.

Reference Books for Practical:

i) An Introduction to Practical Biochemistry - David T Plummer
ii) Introductory Practical Biochemistry - Sawhney & Singh
iii) Biochemical Methods - S. Sadasivam and A. Manickam
iv) Experimental Biochemistry-Rao & Deshpande

Continuous Assessment – 25 Marks
Semester Practical examination – 75 Marks
Volumetric Estimation - 40
Organic Analysis - 30 & Record - 05

Syllabus for II B.Sc., Mathematics effective from the year 2019-2020						
Year:	II Year		**Subject Code:**	U18SMA301	**Semester:**	III
Part IV	**Title:** Mathematics for Competitive Examinations (SBS – I)					
Credits:	3				**Max. Marks:** 75	

OBJECTIVES	This course aims to prepare the students for all competitive examinations

Course Outcomes: At the end of the Course, the Students will able to	
CO1	Apply the concept of ratio, proportion and problems on ages in real life situations.
CO2	Identify the gain, loss of a person and more than two persons in real life situations.
CO3	Calculate time, distance, work and simple interest, compound interest.
CO4	Evaluate the measure of central tendencies and measure of dispersion.

UNIT-I: Problems on General Arithmetic

Ratio and proportions - Inverse ratio - properties (Addendo, subtrahendo, componendo & dividendo) - ratio of four numbers - increasing and decreasing order of fractions – Problems on ages.

UNIT-II: Percentages and Partnership

Percentages - gain and loss percents - Partnership problems.

UNIT-III: Time, Distance and Work

Time and distance- Time and work.

UNIT-IV: Commercial Arithmetic

Simple interest - Compound interest **-** Stocks and Shares.

UNIT-V: Basic Statistics

Measures of central tendencies: mean, median, mode, G.M & H.M, error correction, Applications and properties.

Measures of dispersion: Range, M.D., S.D., Q.D, C.V.

Recommended Books:

Units I to IV Refer:

Quantitative Aptitude - R.S. Aggarwal (S.Chand & Co - New Delhi 2008).

Unit V Refer:

Mathematical Statistics – P.R.Vittal, Margham Publications, Chennai-17, Edition 2013.

Reference Books:

1. Course in Mental Abilities and Quantitative Aptitude for Competitive Examinations - Edgar Thorpe (Tata McGraw - Hill Pub., Co., Ltd. New Delhi - II Edn.,).
2. Statistics, RSN Pillai and A. Bagavathi, S.Chand & Co.,

Syllabus for II B.Sc., Mathematics effective from the year 2019-2020						
Year:	II Year		**Subject Code:**	U18NHS301	**Semester:**	III
Part IV	**Title:** Indian National Movement (NME-I)					
Credits:	2				**Max. Marks:** 75	

OBJECTIVES	To enable the students to perceive how traders of the west became the rulers of the east. To understand the policies and strategies of the East Indian Company and the British empire. To evaluate the contribution of the freedom fighters
COURSE OUTCOME(S): At the end of course, the students shall able to	
CO1	Understand the Early Nationalists, socio – Religion Reformers in 19th Century and demonstrate the Political Associations.
CO2	Think Critically about nationalism and its Impact on our Freedom History. Integrate these regarding analyzes the Salient Features of Moderates.
CO3	Understand the Phase of Extremist and their role and Contributions.
CO4	State the role of Gandhiji in the Freedom Movement.
CO5	Evaluate the sacrifices of our freedom fighters and understand the nation hood.

UNIT - I

Early Nationalist Response : Vellore Mutiny of 1806 - Causes, Course, Causes for Failure, Nature and Impact of the Revolt of 1857 – Socio-Religious Reform Movements in 19 th Century - Brahmo Samaj, Raja Ram Mohan Roy - Devendrnath Tagore – Kesav Chandira Sen - Arya Samaj, Dayanada Saraswathi - Prarthana Samaj -Ramakrishna Mission , Swami Vivekananda-Theosophical Society, Annie Besant - Aligarh Movement, Sir Sayed Ahamad Khan - Political Associations In Bengal, Bombay and Madras upto 1885

UNIT - II

Institutionalization of the National Movement: Factors responsible for the formation of the Indian National Congress – Objectives, Origin of the Congress – A.O. Hume - Moderate Phase (1885-1905) – Early Congressman – Gopala Krishna Gokhale - their nature, ideology, politics and leaders

UNIT – III

Extremist Phase (1905-1916): Partition of Bengal – Swadeshi Movement – Bala Gangadhara Tilak - Formation of Muslim Leaque - Surat Split – Swadeshi and Boycott Movement – Bengal Reunion and Transfer of Capital – India in First World War –Home Rule Movement - Lucknow Pact – August Declaration .

UNIT – IV

Emergence of Gandhiji: Rowlatt Act – Jalianwala Bagh Massacre – Khilafat Movement and Non-Cooperation Movement – Boycott of council , Court , School and colleges - Swarajya Party – Simon Commission – Nehru Report – Civil Disobedience Movement – Round Table Conferences – Gandhi Irwin Pact – Poona Pact - Government of India Act 1935

UNIT - V

Final Phase: Provincial Governments – Lahore Resolution – Concept of Pakistan - Subas Chandra Bose and Azad Hind Fauj - INA - Individual Satyagraha - The Cripps Mission – Quit India Movement – Cabinet Mission – Transfer of Power - Mountbatten Plan – Partition – Indian Independence Act - Independence

Books for Reference

1. Tara Chand: History of Freedom Movement Vol. I-IV, Publications Division, Govt. of India, 1983.
2. SumitSarkar: Modern India, 1885 - 1947, MacMillan India Ltd, Madras, 1986.
3. Bipin Chandra and Others: India's Struggle for Independence, Penguin Books, 1990.
4. Majumdar, R.C., & Chopra, P.N., Main Currents of Indian History, Sterling Publishers Pvt Ltd, New Delhi, 1979
5. Desai, A.R., Social Background of Indian Nationalism
6. Grover, B.L., A New Look at Modern Indian History, S.Chand & Company Ltd, New Delhi, 2009.

Syllabus for II B.Sc., Mathematics effective from the year 2019-2020						
Year:	II Year		**Subject Code :**	U18NKS301	**Semester:**	III
Part IV	**Title**: Fundamentals Of Markseting (NME-I)					
Credits:	2			**Max. Marks:** 75		

OBJECTIVES	To acquaint the students with the basics of Markseting to make them understand the consumer behaviour and buying motives.
COURSE OUTCOME(S): At the end of course the students shall able to	
CO1	Provide an idea about Markseting and its functions.
CO2	Enhance the knowledge of students on Markseting of service.
CO3	Students will familiar with the products and its classifications
CO4	Learn basic concept of sales forecast and distribution channel.
CO5	Understand the effective pricing policies and strategy.

UNIT: I INTRODUCTION TO MARKSETING

Markset – Meaning, Definition - Classifications of Markset – Markseting - Meaning, Definition Importance of Markseting – Functions of Markseting – Markseting Concept - Markseting Mix

UNIT: II PRODUCTS

Products – Classifications of products – Product characteristics – Product life cycle – Product mix - Product mix Strategy.

UNIT: III PRICING

Pricing – Objectives, pricing policies and procedures, Factors influencing pricing decision – Kinds of Pricing – Pricing Strategy.

UNIT: IV SALES FORECASTING

Sales Forecasting – Various methods of Sales Forecasting – Limitation of Sales Forecasting – Distribution Channel – Meaning – Importance – Merits and Demerits – Types of Intermediaries.

UNIT: V MARKSETING OF SERVICE

Service Markseting - Concept of Service - Characteristics of Services Markseting - Future of the Service Sector - The mix elements in Service Product - Pricing for Services - Promoting Services - Physical Evidence.

Text books:

1. Slanton , W.J. “Fundamentals of Markseting”,

Reference books:

1. Rajan Nair, “Markseting Management”, Sultan Chand & Sons, 01-Jan-1995
2. RamaswanyNamakumari, “Markseting Management”, Macmillan India Limited, 2002.
3. Philp Kotler, “Markseting Management”, Pearson Education, 06-Jan-2015.

Syllabus for II B.Sc., Mathematics effective from the year 2019-2020						
Year:	II Year		**Subject Code :**	U18NPH301	**Semester:**	III
Part IV	**Title:** Basic Physics (NME-I)					
Credits:	2			**Max. Marks:** 75		

OBJECTIVES	To understand the basics of physics in day to day life and its importance through its applications.
COURSE OUTCOME(S): At the end of course the students shall able to	
CO1	To know about Newton's laws and their application in Washing machine
CO2	To know about absorption of heat, its transfer and their domestic applications.
CO3	To know about the principles involved in sound, light and its common Applications
CO4	To know about natural calamities in Geophysics view, Medical physics and their common applications.
CO5	To know about the Radio waves and Satellites and their common applications

UNIT – I : MECHANICS **6 Hours**

Newton's laws and their importance – Definitions of Work, Power, Energy and their units – Principle and working of Centrifuge - Washing Machine and its functional parts.

UNIT – II : HEAT **6 Hours**

Thermometry - Celsius and Fahrenheit scales - Variation of boiling point with pressure – Principle and working of Pressure cooker – Refrigerator – Air Conditioner – Principle and their capacities

UNIT – III : ACOUSTICS AND OPTICS **6 Hours**

Acoustics - applications and its importance - Ultrasonics – SONAR and its applications – Power of lens – Long sight and short sight – Microscope, Telescope, Binocular and their basic principles and applications.

UNIT – IV : GEO PHYSICS AND MEDICAL PHYSICS **6 Hours**

Earthquake – Richter scale – Thunder and lightning – Lightning arrestors – Principles and Medical applications of X-rays, Ultrasound, Computerised Tomography, Magnetic Resonance Imaging in medicine and their importance.

UNIT – V : RADIOWAVES AND COMMUNICATION **6 Hours**

Electromagnetic spectrum–Radio Waves–Basics of AM and FM Transmission and Reception–Mobile communication fundamentals–Importance of Satellites.

Books for study:

1. The Learner's Series – Everyday Science – Published by INFINITY BOOKS, New Delhi.
2. The Hindu speaks on Science, Vol I & II, Kasturi & Sons, Chennai.

Books for Reference:

1. Fundamentals of Physics, D. Hallidy, R. Rensick and J. Walker, 6th Edition, Wiley, NY (2001).
2. Physics, Vols I, II, III , D. Halliday, R. Rensick and K.S. Krane, 4th Edition, Wiley, New York (1994).
3. The Feymann Lectures on Physics Vols, I, II, III , R.P. Feynmann, R.B. Leighton & M. Sands, Narosa, New Delhi (1998).

Syllabus for B.Sc., Mathematics & Physics effective from the year 2019-2020						
Year:	II Year		**Subject Code :**	U18NCH301	**Semester:**	III
Part IV	**Title:** Chemistry in Daily Life (NME-I)					
Credits:	2				**Max. Marks:** 75	

Objective(s)	To introduce students to a breadth of ways in which chemistry impacts every aspect of modern life, from the food we eat to the clothes we wear, the way we communicate and work, the way we keep ourselves healthy and how we diagnose and treat those who aren't. Chemistry's role in our everyday life and how chemistry will impact on people's lives in the future.
Course Outcome(s)	
CO1	Understand the basic concepts in chemistry.
CO2	Explore the knowledge of comestics and their hazardous in our daily life.
CO3	Gain the knowledge of water analysis and their treatment methods.
CO4	Understand the concepts of pH and buffer action in our daily life.
CO5	Learn about the nature of food, food sources, balanced diet, various adulterants and their governing laws.

UNIT: I Basic Concepts in Chemistry

Elementary ideas of Atoms, elements, Atomic mass and Molecular mass. Isotopes, isobars and isotones. Methods of expressing concentration: Weight percentage, molality, molarity, normality and ppm.

UNIT: II Cosmetics

General formulation, preparation and toxicology of different types of cosmetics - Tooth paste, Shampoos, Hair dyes, lipstick, nail polish, perfumes, deodorants, Shaving cream Talcum powder, soaps and detergents.

UNIT-II Water Analysis

Sampling of Water for analysis - Chemical Substances affecting Potability - Colour, Turbidity, Odour, Taste, Temperature, pH and Electrical Conductivity. Purification of water Hard and soft water. Analysis of pollutant water by COD and BOD.

UNIT-IV Acid - Base balance

Definition classification, preparation properties and uses of acids and bases of Neutralisation reactions in everyday life. Indicators pH and their biological significance of pH; Buffer solutions – Importance of buffer in living system.

UNIT-V Food and Nutrition

Carbohydrates, Proteins, Fats, Minerals and Vitamins, definitions, sources and their physiological importance - balanced diet.

Adulterants in milk, ghee, oil, coffee powder, tea, asafoetida, chilli powder, pulses and turmeric powder - identification. Food laws, Safety and Standards.

REFERENCES:

1. Chemical Process Industries (4^{th} Edition) R. Norris Shreve Joseph A.Brink,Jr.
2. Perfumes, Cosmetics and Soaps W.A.Poucher (Vol.3) Environmental Chemistry A.K.De.
3. B. Sreelakshmi, Food Science, New Age International, New Delhi, 2015.
4. Shashi Chowla; Engineering Chemistry, Danpat Rai Publication.
5. B.K. Sharma; Industrial Chemistry. Goel Publishing House, Meerut, 2003.
6. C.N.R. Rao; Understanding Chemistry, Universities Press.
7. M.K. Jain and S.C. Sharma; Modern Organic Chemistry, Vishal Pub. Co., Jalandhar, 2009.
8. V.R.Gowariker; N.V. Viswanathan and J. Sreedhar; Polymer Science, 2^{nd} edn., New Age, New Delhi, 2015.
9. P.C. Pall; K. Goel and R.K. Gupta; Insecticides, Pesticides and Argobased Industries.
10. Singh, K., Chemistry in Daily Life; Prentice Hall of India, New Delhi, 2008.

Syllabus for II B.Sc., Mathematics effective from the year 2019-2020						
Year:	II Year		**Subject Code :**	U18NZL301	**Semester:**	III
Part IV	**Title:** Poultry Farming (NME-I)					
Credits:	2			**Max. Marks:** 75		

Objective: To impart training on Modern Poultry Farming Technology
To create knowledge on self employment opportunity.

Course outcomes

At the end of the course the student will be able to	
CO1	To learn the importance and current need of Poultry
CO2	Promote and encourage the students to study the types of fowls.
CO3	To study the morphology of breeds
CO4	Learn the proper and scientific methodology of feed
CO5	To learn the diseases and management.

UNIT – I

Poultry-definition-types of poultry-fowls-ducks-Quails. Scope and importance of poultry-Status of Poultry in India and World. Classification of fowls based on colour, comb and meat.

UNIT – II

External structure of a male and female fowl-identification of sex-External morphology of variety of fowls: American Class (Rhode Island Red and Plymouth Rock), Asiatic class (Brahma), English Class (Sussex, Australop and Orpington), Mediterranean class (Leghorn and Minorca)

UNIT – III

Feeding poultry –Feed Preparation- Feeing equipments-Management of Egg Layers – Management of Broilers in large scale farms.

UNIT – IV

Poultry diseases: Causative agent and prevention of Viral, Bacterial, Fungal, protozoan and Parasitic diseases. Vaccination chart for fowls.

UNIT – V

Construction and Management of modern poultry farms – Management of egg layers-care during winter and summer-Progressive plans to promote poultry as a self-employment venture.

Reference Books:

Jull Morley, A. 1971: Poultry Husbanry, Tata –McGraw Hill Publ. Co New Delhi – India.

Sastry, Thomas and Singh, 1982: Farm Animals Management and Poultry production – Vikas Publ. co. New Delhi – India.

Harbans Singh and Earl.N. Moore, 1982: Live stock and poultry production – prentice hall India Publ. Co., New Delhi – India.

Banarjee, G.C. 1986: poultry, Oxford – IBH publ. co., New Delhi – India.

C.ABDUL HAKEEM COLLEGE (Autonomous), Melvisharam

Syllabus for Second year UG Programmes effective from the year 2018-2019

Class	: Second year UG Programmes	**Semester**	: III
Subject Code	: U18NTA301	**Title**	: Basic Tamil (Non Major-1)
Credits	: 2	**Max Marks**	: 75

OBJECTIVES	தமிழ்மொழியின் அடிப்படை இலக்கண, இலக்கியப் பண்புகளை எழுத மற்றும் வாசிக்க ஆயத்தப்படுத்தல்.
COURSE OUTCOME(S)	
CO1	தமிழ் எழுத்துக்களை ஒலி வடிவம், வரி வடிவம் என பிரித்து வகைப்படுத்தல். தமிழின் அடிப்படை இலக்கிண வடிவ மாறுதல்களை எடுத்துரைத்தல்.
CO2	எளிமையான தமிழ்ச் சொற்களை அறிமுகப்படுத்தி பொருளை விளக்குதல். அதிகம் பயன்படும் பெயர், வினை, மற்றும் தொகுப்புச் சொற்களை அமைக்க பயிற்சி வழங்கல்
CO3	எளிமையான சிறுகதைகளின் வழி வாசிப்புத் திறனை மேம்படுத்தல்.

பாடத்திட்டம்

அலகு–I எழுத்து

1. உயிர் எழுத்துக்கள். மெய்யெழுத்துக்கள் - வகை, எண்ணிக்கை அறிதல்
2. உயிர் மெய் எழுத்துக்கள், வல்லினம், மெல்லினம், இடையினம்

அலகு–II எழுத்து

திணை, பால், எண், இடம், காலம், ஒருமை - பன்மை வேறுபாடு, குறில் நெடில் வேறுபாடு

அலகு–III சொல்

1. ஓரெழுத்து ஒரு மொழி பெயர் (பூ,ஆ,கா...) வினை (வா,போ...)
2. ஈரெழுத்து ஒரு மொழி பெயர் (கனி, பனி...) வினை (நில், படி...)
3. தொடர் மொழி : முக்கனி ,முத்தமிழ், மூவேந்தர் ,நாற்றிசை, ஐம்பொறி , அறு சுவைகள் - இவற்றை விளக்குக.

அலகு–IV சொல்

1. பெயர்ச்சொல் , வினைச்சொல் வகைகள்
2. பறவைப் பெயர்கள், விலங்குகளின் பெயர்கள், மலர்கள், வானவில்லின் வண்ணங்கள், இந்திய மொழிகள், எண்கள் (ஒன்று முதல் பத்து வரை எழுத்தால் எழுதுதல்)

அலகு–V சிறுகதை

1. நேர்மை தந்த பரிசு

Syllabus for II B.Sc., Mathematics effective from the year 2019-2020						
Year:	II Year		**Subject Code :**	U18NUR301	**Semester:**	III
Part IV	**Title:** Functional Urdu (NME-I)					
Credits:	2				**Max. Marks:** 75	

OBJECTIVES	To popularize Urdu among Non-Urdu Knowing students. To introduce them to the basic infrastructure of Urdu. To train them in exact pronunciation of Urdu words.
COURSE OUTCOME(S): At the end of course the students shall able to	
COURSE OUTCOMES	➢ Students will learn the primary lessons in Urdu. ➢ They will develop the ability to form simple sentences. ➢ They will gain proficiency in Urdu Calendar.

Unit I

Urdu alphabet

Reading & Writing practice in Urdu

Unit II

Word completion,

Pronunciation, Connecting words.

Unit III

Vowels,

Prepositions & Urdu Numerals.

Unit IV

Formation of Simple Sentences.

Unit V

Conversation &

Urdu Calendar (Week days and Months).

C.ABDUL HAKEEM COLLEGE (Autonomous), Melvisharam

Syllabus for Second year B.A.,B.Sc.,&B.Com (C.S) effective from the year 2018-2019

Class	: UG Second year B.A.,B.Sc.,&B.Com (C.S)	**Semester**	: IV
Subject Code	: U18FTA401	**Title**	: Part-I Tamil
Credits	: 4	**Max Marks**	: 75

OBJECTIVES	செவ்வியல் தமிழ் இலக்கிய வடிவங்கள், விழுமியங்கள், இலக்கண அமைப்பியல் போன்றவற்றை அறியச் செய்தல்.
COURSE OUTCOME(S)	
CO1	சங்க கால சமூகவியலையும் வாழ்வியல் அறங்களையும் அறிய வைத்தல். இடைக்காலத்தில் சமூக அமைப்பினையும் இலக்கிய வடிவ மாறுதல்களையும் விளக்கி எடுத்துரைத்தல்.
CO2	கவிதைகள் வெளிக்காட்டும் சம கால பதிவுகளை எளிமையாக வெளிக்கொணர்தல். இலக்கணத்தைப் பயிற்றுவிப்பதன் மூலம் சிறந்த மொழியாக்க முயற்சிக்கு ஆயத்தப்படுத்தல்
CO3	படைப்பிலக்கியப் பயிற்சி வழி படைப்புத்திறனை மேம்படுத்தல்.

பாடத்திட்டம்

அலகு–I சங்க இலக்கியம்

1. குறுந்தொகை - பாடல் எண்கள் : 32, 40, 58, 69, 79, 176 (6 பாடல்கள்)
2. ஐங்குறுநூறு - குறிஞ்சி – கபிலர் - கிள்ளைப்பத்து (முதல் 6 பாடல்கள்)
3. புறநானூறு - பாடல் எண்கள் : 86, 182, 188, 196, 277, 279 (6 பாடல்கள்)

அலகு–II சிற்றிலக்கியம்

1. குற்றாலக் குறவஞ்சி - குற்றால மலை வளம் (6 பாடல்கள்)
2. முக்கூடற் பள்ளு - பள்ளியர் ஏசல் (8 பாடல்கள்)
3. முத்தொள்ளாயிரம் - சேரன் -3 சோழன் -3 பாண்டியன் - 3 (9 பாடல்கள்)

அலகு–III கவிதை

1. கவிஞர் மீரா - ‘ஏற்றம் காண்போம்’
2. கவிஞர் முடியரசன் - ‘துயில்’
3. கவிஞர் தாராபாரதி - ‘காற்றுக்குப் புதிய திசை காட்டு’

அலகு–IV இலக்கணம்

யாப்பு- எழுத்து – அசை – சீர் - தளை – அடி – தொடை

அலகு–V(அ) இலக்கியவரலாறு

1. சங்க இலக்கியங்கள்
2. சிற்றிலக்கியங்கள்'

(ஆ) திறனறிப் பயிற்சி

1. படைப்பிலக்கியம் - கட்டுரை , கதை ,– பயிற்சி வழங்கல்

பார்வை நூல்கள்

1	இலக்கியச் சாரல்	-	சி.அப்துல் ஹக்கீம் கல்லூரி வெளியீடு. 2019 சூன் வெளியீடு
2	மீரா கவிதைகள்	-	கவிஞர் மீரா அகரம் பதிப்பகம்,1.நிர்மலா நகர்,தஞ்சாவூர் -7 முதல் பதிப்பு -2002
3	முடியரசன் கவிதைகள்	-	கவிஞர் முடியரசன் பாரி நிலையம், 29ஏ, பிராட்வே, சென்னை -1 முதல் பதிப்பு -1954
4	கவிஞாயிறு தாராபாரதி கவிதைகள்	-	மலர் மகன் (தொ.ஆ) இலக்கிய வீதி, 149- பூங்கா சாலை அண்ணா நகர் மேற்கு - விரிவு சென்னை. -01 முதல் பதிப்பு -2007
5	வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு	-	முனைவர் பாக்யமேரி என்.சி.பி.எச்., அம்பத்தூர், சென்னை -98 முதல் பதிப்பு -2008
6	நற்றமிழ் இலக்கணம்	-	டாக்டர்.சொ.பரமசிவம், பட்டுப் பதிப்பகம், 1269, 32-ஆம் தெரு அண்ணாநகர் மேற்கு, கம்பர் குடியிருப்பு, சென்னை -40 பன்னிரண்டாம் பதிப்பு -2012

Syllabus for B.A., / B.Sc., / B.Com., (CS) effective from the year 2019-2020						
Year:	II Year		**Subject Code:**	U18FUR401	**Semester:**	IV
Part I	**Title:** Urdu – IV					
Credits:	3			**Max. Marks:** 75		

OBJECTIVES:	✓ To promote students' knowledge of various literary genres like Drama. ✓ To effectuate their caliber to pen poems of their own. ✓ To motivate them to build lively conversations.
COURSE OUTCOMES	➢ Students will learn to excel in the art of reading Plays. ➢ They will hoan their faculty of imagination. ➢ They will emerge as exponents of good conversation.

Unit – I

1. Darwaza kholdo-Krishan Chander [First Quarter]
2. Agoosh-E- Lihad Mein Jab Ke Sona Hoga - Anees
3. Gulshan Mein Phiroou – Anees
4. Meer Taqi Meer

Unit – II

1. Darwaza kholdo-Krishan Chander [Second Quarter]
2. Ghaflat Kihansihse Aah Bharna Acha –Akber Allahbadi
3. Har Ek Se Sun Naye Fasana Ham Ne – Aker Allahbadi
4. Mirza Ghalib

Unit – III

1. Darwaza kholdo-Krishan Chander [Third Quarter]
2. Gunche Teri Zindagi Pe Dil Halth Hai -- Josh
3. Gunche Teri Zindagi Pe Dil Halth Hai – Josh
4. Sir Syed Ahmed Khan

Unit – IV

1.Darwaza kholdo-Krishan Chander [Last Quarter]
2.Muflis Hun Na Dowlath Hai Na Sermaya Hai --Amjad
3.Is Naam Ki Zindagi Mein Kuch Jaan To Ho – Amjad
4.Moulana Hali
5. Prem Chand

Unit – V

1. Roshan Nahi Karta Jala Dethe Hain –Asghar Vellori
2. Dhoonda Tho Kithabon Mein Sadaqath Na Mili – Asghar Vellori
3. Akber Ilahbadi
4. Allama Iqbal
5. Krishan Chandar

BOOK PRESCRIBED:

"ADAB-E-JAMEEL" Published by Dept. of Urdu, C. Abdul Hakeem College, Melvisharam.

Syllabus for B.A., / B.Sc., / B.Com., (CS) effective from the year 2019-2020						
Year:	II Year		**Subject Code:**	U18FURP41	**Semester:**	IV
Part I	**Title:** Practical Urdu – IV					
Credits:	1			**Max. Marks:** 75		

OBJECTIVES:	✓ To monitor students' career prospects through their academic expertise. ✓ To train them to be fit enough for jobs in Software Sector. ✓ To groom them to be adepts at using various Fronts and Inpage Tools.
COURSE OUTCOMES	➢ Students will be rolled out as maximum beneficiaries. ➢ They will be fully armoured with sensitive software techniques. ➢ Their computeracy will help them to gain control over their Professional assignments.

URDU SOFTWARE
[PRACTICAL & VIVA-VOCE]

Unit I

Introduction to Urdu Software
Practical

Unit II

Key Board and its kinds
Practical

Unit III

Types of Fonts
Practical

Unit IV

Text Alignment
Practical

Unit V

Inpage & Unicode Tools
Practical

Prescribed Text Book "URDU SOFTWARE" Publish by NCPUL, New Delhi

LINGUSTIC WITH PRACTICAL (Job Oriented Urdu Software Programme)

Syllabus for B.A., / B.Sc., / B.Com., (CS) effective from the year 2019-2020						
Year:	II Year		**Subject Code:**	U18FEN401	**Semester:**	IV
Part II	**Title:** English - IV					
Credits:	4			**Max. Marks:** 75		

COURSE OUTCOME(S):	
CO1	Perceive the various forms of literature like Prose, Poetry, Biography, Short Story and Drama.
CO2	Assimilate the knowledge of grammatical system of English Language and also develop four Language Skills.(LSRW)

UNIT - I **PROSE**

1. The Rule of the Road — A. G. Gardiner
2. Forgetting — Robert Lynd
3. Mobile and Mixed Up — Anil Dharker
4. Water: The Elixir of Life — Sir C. V. Raman

UNIT - II **POETRY**

1. The Lotus — Toru Dutt
2. The Highway Man — Alfred Noyes
3. Character of a Happy Life — Henry Wotton
4. Refugee Mother and Child — Chinua Achebe

UNIT - III **SHORT STORIES**

1. Two Gentlemen of Verona — A. J. Cronin
2. The World Renowned Nose — V. M. Basheer
3.

UNIT - IV **ONE-ACT PLAY& BIOGRAPHY**

1. Love at First Sight – The Tempest — William Shakespeare
2. My Friend, Albert Einstein — Holfman

UNIT - V **WARM UP**

1. Lexical Skills
2. Descriptive Grammar
3. Traditional Grammar
4. Communication Skills (LSRW)
5. Composition

WARM UP

1. **Lexical Skills**
   - Common Errors in English
   - Formation of Words
   - Spelling and Sound: Introduction to Phonetics
   - Vowels and Consonants

2. **Descriptive Grammar**
   - Conjunction and its Kinds
   - Interjection
   - Regular and Irregular Verbs
   - Modals and Auxiliaries Verbs

3. **Traditional Grammar**
   - Question Tags
   - Simple, Compound & Complex Sentences
   - Figures of Speech (a) Metaphor (b) Irony (c) Oxymoron (d) Personification (e) Simile

4. **Communication Skills (LSRW)**
   - Phoning
   - Offering Help
   - Asking for Information
   - Making Appointment

5. **Composition**
   - Designing a Resume
   - Writing Covering Letters for Resume
   - Preparing Agenda for Meetings
   - Writing Minutes of Meetings

Books Prescribed:

HALL OF FAME – IV Board of Editors, Published by Emerald publishers, Egmore, Chennai – 600 008: www.emeraldpublishers.com, Mail: info@emeraldpubliser.com

Syllabus for II B.Sc. Mathematics effective from the year 2018-2019						
Year:	II Year		**Subject Code:**	U18MMA401	**Semester:**	IV
Part III	**Title:** Vector Analysis and Fourier Analysis					
Credits:	4				**Max. Marks:** 75	

CORE PAPER – 6

Objective: This course aims to study about the vector calculus which is essential tools of modern applied mathematics. To develop deep understanding of key concepts followed by problems of applied nature.

At the end of the course the student will be able to	
CO1	Define the concept of Vector differentiation and use it to check Directional derivative, Irrotational and Solenoidal of vector and scalar functions.
CO2	Calculate Line Integral, Surface Integral and Volume Integral and use it in solving Gauss Divergence theorem, Stoke's theorem and Green's theorem.
CO3	Construct the Fourier series for piecewise continuous functions.
CO4	Define the concept of Fourier Transform and demonstrate its use in some special type of Integrals.

UNIT-I: Vector Differentiation

Vector Differential Operator ∇ - Gradient of a Scalar Function - Directional Derivative - Geometric Interpretation – Gradient of: the sum of Functions, the product of functions and a function of function - Operations involving ∇- Divergence of a Vector and its Physical Interpretation - Curl of a Vector and its Physical Interpretation - Expansion Formulae for Operators involving ∇ - Solenoidal and Irrotational.

Chapter 1

UNIT-II: Vector Integration

The Line Integral - Surface and Volume Integral.

Chapter 2

UNIT-III: Vector Integration:(Continuation)

Statements of Gauss Divergence Theorem, Stoke's and Green's Theorems (without proof) and Problems.

Chapter 2

UNIT-IV: Fourier series

Euler's Formulae - Conditions for Fourier Expansion - Functions having points of Discontinuity- Odd and Even Functions - Expansions of Odd or Even periodic Functions - Half-range Series - Parseval's Formula.

Chapter 10: 10.2 to 10.4, 10.6, 10.7 and 10.9 (only Parseval's Formula)

UNIT-V: Fourier Transform

Definition - Fourier Transform: Fourier Sine and Cosine Transforms – Finite Fourier Transform - Properties of Fourier Transforms - Convolution Theorem for Fourier Transforms - Parseval's Identity for Fourier Transforms (without derivation).

Chapter 22: 22.2, 22.4 to 22.7.

Recommended Books:

For Units 1, 2 and 3 Refer:

P.R.Vittal. (2004) Vector Calculus, Fourier series and Fourier Transform. Margham Publications, Chennai.

For Units 4 and 5 Refer:

B.S.Grewal [2002] Higher Engineering Mathematics, Khanna Publishers, New Delhi.

Reference Books :

M.K.Venkataraman. (1992) Engineering Mathematics-Part B. National Publishing Company, Chennai.

Syllabus for II B.Sc. Mathematics effective from the year 2018-2019						
Year:	II Year		**Subject Code:**	U18MMAP41	**Semester:**	IV
Part III	**Title:** Problem Solving Techniques Using GeoGebra and MATLAB (Practical)					
Credits:	1				**Max. Marks:** 75	

CORE PRACTICAL-III

Objectives: This course aims to Solve Analytical Problems in Graphical by using GeoGebra Software and to Solve Problems in Calculus and Differential Equations by using MATLAB Software.

Course Outcomes: At the end of the Course, the Students can able to	
CO1	Solve first and second order Ordinary Differential Equations.
CO2	Explain geometrical representations of Conics

GEOGEBRA:

1. Draw a circle
   a) Using centre and radius.
   b) Using centre passing through a point.
   c) Passing through three points.
2. Draw a line
   a) Passing through two given points.
   b) Given one point and slope.
   c) Perpendicular Line.
   d) Parallel Line.
3. Draw a Vector
   a) Between two points.
   b) From a point and Parallel to a Vector.
4. Draw a Tangent
   a) To the circle from outside point.
   b) To the circle from a point on the circle.
5. Draw a Parabola.
6. Draw an Ellipse.
7. Draw a Hyperbola.

MATLAB:

1. Solving ordinary differential equation of first order.
2. Solving ordinary differential equation of second order.
3. Application of multiple integrals to find area and volume.

REFERENCES:

1. GEOGEBRA MANUAL
2. MATLAB MANUAL

Syllabus for B.Sc., Mathematics & Physics effective from the year 2019-2020						
Year:	II Year		**Subject Code:**	U18ACH401	**Semester:**	IV
Part III	**Title:** Chemistry -II (Allied)					
Credits:	4			**Max. Marks:** 75		

Objective	To study the basic concepts of coordination compounds, structure and properties of carbohydrates, proteins and amino acids. To learn the fundamental concepts in Electrochemistry, Industrial and medicinal chemistry.
Course Outcome(s)	
CO1	Define the basics of Coordination, VSEPR and Interhalogen Compounds
CO2	Describe the properties of carbohydrates and proteins
CO3	Outline the basics of electrochemistry and buffer solutions
CO4	Interpret the applications of Paints, Fertilizers, Pesticides, etc.
CO5	Explain the actions of Drugs and Anaesthetics

UNIT - I: INORGANIC CHEMISTRY - II

1.1 Coordination chemistry: Werner Theory of coordination compounds – Chelation – Function and structure of Haemoglobin and Chlorophyll.

1.2 VSEPR Theory: Shapes of simple molecules BF_3, PCl_5, SF_6 and XeF_6.

1.3 Interhalogen compounds: Definition, Types (AX, AX_3, AX_5 and AX_7), Preparation Properties and Structure.

UNIT - II: ORGANIC CHEMISTRY - II

2.1 Carbohydrates: Classification –Properties, Structure and uses of Glucose, Starch, Cellulose Nitrate and Cellulose acetate.

2.2 Amino acid and protein: preparation and properties of Glycine – Classification of Protein based on physical properties and biological functions.

2.3 Primary and secondary structures of protein (Elementary treatment only) Composition of DNA and RNA and their biological role.

UNIT - III: PHYSICAL CHEMISTRY - II

3.1 Electrochemistry: Conductance – Specific and Equivalent conductance – their determination – effect of dilution on conductance.

3.2 Kohlrasch's law – Determination of dissociation constant of weak electrolyte using conductance measurement – Conductometric Titrations – Strong Acid Vs Strong Base, Strong Acid Vs Weak Base and Weak Acid Vs Strong Base.

3.3 pH definition - Buffer solutions – Importance of buffer in living system.

UNIT - IV: INDUSTRIAL CHEMISTRY

4.1 Paints – Requisites of a good Paint, Constituents and functions of paint. Colour and Dye – Classification based on constitution and application.

4.2 Fertilizers – Bio-fertilizers – Organic manures and their importance – Role of NPK in plants – preparation and uses of Urea, Ammonium Nitrate, Potassium Nitrate and Super phosphate of lime.

4.3 Contents in match sticks and match box – Industrial making of safety matches. Preparation and uses of chloroform, DDT, gamhexane and freon.

UNIT - V: MEDICINAL CHEMISTRY

5.1 Drugs – Sulpha drugs – Uses and mode of action of Sulpha Drugs – Antibiotics – Uses of Penicillin, chloramphenicol, and streptomycin. Drug abuse and their implications – alcohol – LSD.

5.2 Anaesthetics – General and local anaesthetics – Definition and examples for antiseptics analgesics, antipyretics, tranquilizers and sedatives

5.3 Causes, prevention and controlling measures of Diabetes, Cancer and AIDS.

Books for Study:

5. R.D. Madan, **Modern Inorganic Chemistry,** 2nd Edition, S. Chand & Co, Reprint 2004.
6. B.S Bahl and Arun Bahl, **Advanced Organic Chemistry**, Sultan Chand and Co., Ltd, Reprint 2010.
7. B. R. Puri, L. R Sharma and M.S Pathania, **Principles of Physical Chemistry**, 47th Edition, Vishal Publishing Co., 2018.

Books for Reference:

1. P.L Soni and Mohan Katyal, **Textbook of Inorganic Chemistry,** 20th Edition, Sultan Chand & Sons, Reprint 2001.
7. P.L Soni and H.M Chawla, **Textbook of Organic Chemistry,** 25th Revised Edition, Sultan Chand & Sons, 1992.
8. K.S Tewari and M.K Vishnoi, **A Textbook of Organic Chemistry,** 3rd Edition, Vikas Publishing House Pvt. Ltd, 2006.
9. M.K Jain and S.C Sharma, **Modern Organic Chemistry,** Vishal Publishing Co, 2004.
10. P.L Soni, O.P Dharmarha and U.N Dash, **Textbook of Physical Chemistry,** 21st Revised Edition, S. Chand & Co, Reprint 2000.
11. P.K Mani and A.O Thomas, **A Textbook of Practical Chemistry,** Scientific Publication, 1973.
12. O.P. Pandey, D. N. Bajpai and S.Giri, **Practical Chemistry,** 8th Edition, S. Chand & Co, 2001.

Syllabus for B.Sc., Mathematics & Physics effective from the year 2019-2020						
Year:	II Year		**Subject Code:**	U18ACHP41	**Semester:**	IV
Part III	**Title:** Chemistry -II (Allied Practical)					
Credits:	2				**Max. Marks:** 75	

OBJECTIVES	This course aims to study about linear programming problem and simulation by using various techniques.

Course Outcomes: At the end of the Course, the Students will able to	
CO1	Determine the amount of unknown substances by volumetric analysis.
CO2	Develop skills required to analyze organic compounds qualitatively.

PART I

Volumetric Analysis

Students must write the short procedure and calculations for the given estimation in the examination.

Acidimetry and Alkalimetry

5. Estimation of Hydrochloric acid using standard Sulphuric acid solution.
6. Estimation of Sodium Hydroxide using standard Hydrochloric acid solution.
7. Estimation of Borax using standard Sodium Carbonate solution.
8. Estimation of Oxalic acid using standard Sulphuric acid solution.

Permanganometry

3. Estimation of $FeSO_4$ using standard Mohr salt solution.
4. Estimation of Oxalic acid using standard ferrous sulphate solution.

Dichrometry

3. Estimation of $K_2Cr_2O_7$ using standard Potassium Dichromate solution.
4. Estimation of Fe^{2+} using diphenylamine / N-phenyl anthranilic acid as an indicator.

Complexometry

3. Estimation of Copper using standard Copper Sulphate solution.
4. Estimation of Total Hardness of water using Ethylene diammine tetra acetic acid.

PART II

Organic Qualitative Analysis

Systematic analysis of the following Organic compounds containing one functional group and their characterization using confirmatory tests.

- ✓ Aromatic aldehyde - Benzaldehyde
- ✓ Carbohydrate
- ✓ Carboxylic acid (mono and dicarboxylic acid)
- ✓ Phenol
- ✓ Aromatic primary amine
- ✓ Amide
- ✓ Diamide

Semester Examination	**Marks**	**Internal Assessment**	**Marks**
Volumetric Analysis	40	Two Tests	10
Organic Analysis	30	Attendance / Regularity	10
Record	05	Results accuracy	05
Total	**75**	**Total**	**25**

Error Calculation for Volumetric Analysis

Error	**Marks**
< 2%	40
> 2 - < 3%	30
> 3 - < 4 %	20
> 4 - < 5 %	10
> 5 %	5

Systematic Organic Qualitative Analysis: 30 Marks

Procedures	**Marks**
Aliphatic/Aromatic	6
Saturated/Unsaturated	6
Elements Present / Absent	12
Functional group	6
Total	**30**

Syllabus for B.Sc., Chemistry effective from the year 2019-2020						
Year:	II Year		**Subject Code :**	U18ACH402	**Semester:**	IV
Part III	**Title:** Biochemistry -II (Allied)					
Credits:	4			**Max. Marks:** 75		

Objective	The main objectives of this course is intended to provide a basic foundation and understanding of the principles of modern biochemistry necessary for further work in the biochemical/biomedical areas. Knowledge and understanding of the basic principles in biochemistry including the molecular composition of living cells, the organization of biological molecules within the cell, and the structure and function of these biological molecules with some practical connections to everyday life.
Course Outcome(s)	
CO1	Acquire fundamental knowledge of mechanisms involved in maintenance of body fluid pH homeostasis and electrolytes.
CO2	Gain the knowledge of the fundamental aspects of enzymology- Action, mechanism, kinetics and inhibition.
CO3	To excel in integrate the various aspects of metabolism and their regulatory pathways.
CO4	Understand the basic concepts of biochemical basis of inborn error metabolism.
CO5	Familiarize with the principles of various conventional and specialized laboratory investigations and instrumentation analysis and interpretation of a given data.

UNIT - I: Acid - Base balance:

Concept of pH, pOH, buffer and its application, buffer capacity. Henderson - Hasselbalch equation and its importance. Buffer in body fluids of extracellular and intracellular fluids and their function. Fluid and Electrolytes balance, Disorders.

UNIT - II: Enzyme Chemistry:

Definition - enzyme, apoenzyme, holoenzyme, prosthetic group, active site, enzyme specificity, turnover number, specific activity, Katal, IU, coenzyme, co-factor, allosteric enzymes. IUB/EC Classification (up to one digit). Factors affecting enzyme reaction - substrate, pH and temperature. Enzyme kinetics-Derivation of Michaelis-Menten equation and

Lineweaver-Burk plot for mono-substrate reaction. Enzyme inhibition - Competitive and Non-competitive.

UNIT - III: Metabolism

Carbohydrate metabolism-Glycolysis, TCA cycle, HMP shunt and its energy yield. amino acids metabolism-Deamination, Transamination reactions, SGOT and SGPT. Urea cycle, beta oxidation of fatty acids.

UNIT - IV: Inborn Errors of Metabolism

Disease definition, causes and symptoms-Galactosemia, Von - Gierke's Disease, Hemophilia, Albinism, Alkaptonuria, Taysach's.

UNIT - V: Biochemical Techniques:

Principles and application of: (a)chromatography (paper, and thin layer) , (b) electrophoresis (SDS PAGE), (c) absorption photometry (colorimetry and spectrophotometry), (d) centrifugation (Differential centrifugation), (e) radio immunoassay.

REFERENCES:

1. Lehninger Principles of Biochemistry-David L. Nelson, Michael M. Cox, Macmillan Worth Publishers.
2. Biochemistry - Garrett Grishmam. 3rd edition. International student's edition.
3. Biochemistry by L . Veerakumari , MJP publishers,Chennai-5.
4. Harper's Biochemistry-Rober K. Murray, Daryl K. Grammer, McGraw Hill, Lange Medical Books. 25th edition.
5. Fundamentals of Biochemistry-J.L. Jain, Sunjay Jain, Nitin Jain, S. Chand & Company.
6. Biochemistry-Dr. Amit Krishna De, S. Chand & Co., Ltd.
7. Biochemistry-Dr. Ambika Shanmugam, Published by Author.
8. Biomolecules-C.Kannan , MJP Publishers,Chennai-5.
9. Biophysical Chemistry - Upadhyay and Upadhyay Nath, Himalayan Publication.
10. Analytical Biochemistry - R.B. Turner, Elsevier, N.Y.

Syllabus for B.Sc., Chemistry effective from the year 2019-2020						
Year:	II Year		**Subject Code :**	U18ACHP42	**Semester:**	IV
Part III	**Title:** Biochemistry -II (Allied Practical)					
Credits:	2				**Max. Marks:** 75	

Objective(s):	The main objectives of these experiments to support theoretical co and clinical diagnosis.
Course outcome	
Volumetric Analysis	To develop skills for quantitative estimation using the different branches of volumetric Analysis.
Qualitative Organic Analysis	To develop skills required for the qualitative analysis of organic compounds, determination of physical constants.
Preparations	To make use of conventional techniques/instruments to perform biochemical analysis.

Volumetric Estimation:

1. Estimation of Iron in Ferrous Ammonium Sulphate using potassium permanganate as link solution and oxalic acid as primary standard.
2. Estimation of Glucose by Benedict's quantitative method.
3. Estimation of Glycine by formal titration.
4. Estimation of ascorbic acid by titrimetric method using 2, 6-dichlorophenol indophenol.
5. Determination of saponification value of edible oil.

Qualitative analysis:

1. Identification of biomolecules - Amino acids, proteins, carbohydrates, lipids and nucleic acids.
2. Qualitative tests for Amino acids and proteins (Million's , Ninhydrin, Xanthoproteic and Biuret test)
3. Qualitative tests for lipids a) Miscibility test b) Saponification test c) Unsaturation test d) Sudan black dye test e) Salkowski test for cholesterol
4. Qualitative tests for DNA (DPA) & RNA (Orcinol) (Neumann's test for presence of phosphorus)

Preparation:

1. Casein from milk
2. Starch from potato.
3. Albumins and globulins from egg white.

Reference Books for Practical:

i) An Introduction to Practical Biochemistry - David T Plummer
ii) Introductory Practical Biochemistry - Sawhney & Singh
iii) Biochemical Methods - S. Sadasivam and A. Manickam
iv) Experimental Biochemistry-Rao & Deshpande

Continuous Assessment – 25 Marks
Semester Practical examination – 75 Marks
Volumetric Estimation - 40
Organic Analysis - 30 & Record - 05

Syllabus for II B.Sc., Mathematics effective from the year 2019-2020						
Year:	II Year		**Subject Code:**	U18SMA401	**Semester:**	IV
Part IV	**Title:** Linear Programming (SBS – II)					
Credits:	3				**Max. Marks:** 75	

SKILL PAPER – 2

Objectives:	This course aims to study about linear programming problem and simulation by using various techniques.

Course Outcomes: At the end of the Course, the Students can able to	
CO1	Formulate the linear programming problem and solve them by applying graphical method (two variables) and simplex method.
CO2	Calculate the basic feasible solutions of a transportation programming problem and assignment problem.
CO3	Identify the optimum strategy of a player in game theory and to find its value.
CO4	Relate the simulation concepts with real life problems.

UNIT-I

Linear programming problem - Mathematical formulation of the problem - Graphical solution method - Simplex method - Duality - primal and dual relation (Simple Problems).

UNIT-II

Transportation problem - Degeneracy in transportation problem.

UNIT-III

The Assignment problem – Travelling Salesman method.

UNIT-IV

Game theory - two persons zero sum game - the maximin and minimax principles - saddle points - games without saddle points.

UNIT-V

Simulation - application - advantages and disadvantages - Monte Carlo method - simple problems.

Recommended Text

Gupta P.K. and Hira D.S., (2000) Problems in Operations Research, S.Chand & Co. Delhi.

Reference Books

1. Kanti Swarup, Gupta P.K. and Man mohan, (2002) Problems in Operation Research, Sultan Chand & Sons.
2. V.K.Kapoor [1989] Operations Research, Sultan Chand & sons.
3. P.R.Vittal (2003) Operations Research, Margham Publications, Chennai.
4. J.K.Sharma, (2001) Operations Research: Theory And Applications Macmillan, Delhi.
5. S.J.Venkatesan, Operations Research, J.S. Publishes, Cheyyar-604407.

Syllabus for II B.Sc., Mathematics effective from the year 2019-2020						
Year:	II Year		**Subject Code:**	U18NHS401	**Semester:**	IV
Part IV	**Title:** Civil Services and Other Competitive Examinations (NME-II)					
Credits:	2			**Max. Marks:** 75		

OBJECTIVES	To enable the students to perceive how Competitive Examinations in India. To understand the policies and strategies of the Central Services Union Public Service Commission, Railway Recruitment Board. To evaluate the contribution of the Subjects of Study for TNPSC Examinations Group I and Competitive Examination Preparation Tips
COURSE OUTCOME(S): Students are able to	
CO1	Understand the Union Public Service Commission and its Competitive Examinations in India.
CO2	Study the jobs, in central Government Organizations and how to apply Competitive Examinations.
CO3	Narrate the Kind of Tamil Nadu Public Service Examination Group Wise.
CO4	Understand and Recognize the Subject of Study for the TNPSC Examinations
CO5	Visualize the future Plans and describe the Competitive Examination Preparation Tips

UNIT – I

Competitive Examinations in India: Introduction – Civil Services – Preliminary and Main Examinations – Government Employment in Other Services – Examination Patterns

UNIT - II

Central Services: Union Public Service Commission – Railway Recruitment Board – Defence Examinations – LIC/GIC Examinations – Staff Selection Commission Examinations – UGC / NET Examinations – Bank Examinations

UNIT – III

TNPSC: Tamil Nadu Public Services Commissions – Combined Civil Services Examinations, Group I – Combined Civil Services Examinations, Group II (Interview Posts) – Madras High Court Service Examinations – District Educational Officers Examinations – Village Administrative Officers Examinations – Other Technical Examinations

UNIT – IV

Subjects of Study for TNPSC Examinations Group I: – Mathematics – Physics – Chemistry – Biology – Zoology – History – Sociology – Computer Science – TNPSC Group II, III and IV: General Knowledge – Politics – History – Current Affairs – National Movement – Science – Geography – Economics and Business – Intelligent Quotient –General Tamil – Perusing Previous Years Question Papers

UNIT – V

Competitive Examination Preparation Tips: Motivation – Active Learner – Organizing Studies – Time Management – Reading Newspapers, Magazines, Subject and Reference Books – Writing Examinations at Home – Good Handwriting Practice – Avoiding Stress – Perusing Previous Years Question Papers

Books for Reference

1. Dr. Divya S Iyer, Path Finder: Civil Services Main Examination, DC Books Pvt Ltd, New Delhi
2. Edgar Thorpe, The Pearson CSAT Manual 2013: Civil Services Aptitude Test for the UPSC Civil Services Preliminary Examination, New Delhi
3. S.A. Majid, Special Current Affairs for Civil Services Examination, Kalinjar Publications, New Delhi
4. SanjivVerma, The Indian Economy : For UPSC and State Civil Services Preliminary and Main Examinations, Unique Publications, New Delhi
5. Veerasekaran, TNPSC Group II, Kizhakku Publishers, Chennai
6. Veerasekaran, TNPSC Group III, Kizhakku Publishers, Chennai

Syllabus for II B.Sc., Mathematics effective from the year 2019-2020						
Year:	II Year		**Subject Code:**	U18NKS401	**Semester:**	IV
Part IV	**Title**: Project Management (NME-II)					
Credits:	2			**Max. Marks:** 75		

OBJECTIVES	To initiate students into the starting of a project and to help them execute the project successfully. To give theoretical knowledge for planning and management in the review of the projects undertaken.
COURSE OUTCOME(S): At the end of the course students shall be able to	
CO1	Understand the basics about project and it's types.
CO2	Learn about project survey and idea generation.
CO3	Have in depth knowledge about project selection and choice of technology
CO4	Understand project finance and its sources.
CO5	Understand the project formulation and preparation of project report.

UNIT-I INTRODUCTION

Meaning – Definition – Characteristics of Project – Classification of Projects - Project life cycle.

UNIT-II PROJECT SURVEY

Project Ideas and Innovation - Sources of Project Idea - Need Analysis - Markset Research - Markset Planning.

UNIT-III PROJECT SELECTION

Selection of project: Criteria for Selection of Project - Site selection - Factors Influencing Location of Project – Locational Advantages and Disadvantages - Choice of technology and appropriate Technology.

UNIT-IV PROJECT FINANCE

Sources of Finance – Shares and Debentures-types and features - Public Deposits - Bank Credit – Institutional Supports: ICICI, IDBI, IFCI.

UNIT-V PROJECT FORMULATION AND INCENTIVES

Project Formulation: Meaning – Importance of Project formulation - Feasibility Analysis – Project Report - Incentives – Subsidy, Bounty and Concession – Need for Incentives – State and Central incentives – Taxation benefit.

Text book:

1. C.B. Gupta, "Project management", A.P.H Publishing Corporation, New Delhi, 2000.

Syllabus for II B.Sc., Mathematics effective from the year 2019-2020						
Year:	II Year		**Subject Code:**	U18NPH401	**Semester:**	IV
Part IV	**Title:** Basic Physics II (NME-II)					
Credits:	2			**Max. Marks:** 75		

OBJECTIVES	To understand the basics of physics in day-to-day life and its importance through its applications.
COURSE OUTCOME(S): At the end of the course students shall be able to	
CO1	To know about properties of matter and its applications
CO2	To get knowledge on basic principles of electricity and magnetism and applications of electromagnets
CO3	To acquire knowledge in the content areas of nuclear and particle physics
CO4	To apply principles of physics to astronomical objects
CO5	Know about the conventional and non-conventional sources like Nuclear energy and Ocean thermal energies.

UNIT – I: Properties of Matter **6 Hours**

Strain and stress, elastic limit, Hooke's law – Surface tension – Capillary action – Flow of liquids and gases – Streamline and turbulent flow – Laws of floatation and its applications – Bernoulli's theorem and its applications – Viscosity and its applications.

UNIT – II: Electricity and Magnetism **6 Hours**

Voltage, Current, Resistance, and Ohm's Law, Electrical Power – Difference between AC and DC – Single Phase and Three Phase supply – Transformers and its applications – Dia, Para and Ferromagnetic materials – Properties of magnetic materials.

UNIT – III: Modern Physics **6 Hours**

Atom models evolution up to Bohr atom model (Qualitative description only) – Nucleons and other elementary particles – Fundamental Forces of Nature – Radioactivity and its applications – Crystalline and Amorphous Solids – examples, comparison and applications.

UNIT – IV: Astrophysics **6 Hours**

Introduction – Solar system – Inner planets and outer planets – Kepler's laws of Planetary motion – Constituents of stars – birth and death of stars, stellar explosions, white dwarfs, neutron stars, pulsars, and black holes – Expansion of universe.

UNIT – V: Energy Physics **6 Hours**

Energy sources – Conventional and Non Conventional – Types – Hydro and Thermal – Coal Oil, Gas and their importance – Green house effect – Nuclear energy, Solar energy, Wind energy.

Books for Study:

1.Properties of Matter, R Murugeshan, 5th Edition, S. Chand Publishing, New Delhi.

2. Electricity and Magnetism, R Murugeshan, 10th Edition, S. Chand Publishing, New Delhi.

3. Modern Physics, R Murugeshan and Kiruthiga Sivaprasath, 18th Edition, S. Chand Publishing, New Delhi.

4. Mechanics & Mathematical Physics, R Murugeshan, 3rd Edition, S. Chand Publishing, New Delhi.

Books for Reference:

4. Fundamentals of Physics, D. Hallidy, R. Rensick and J. Walker, 6th Edition, Wiley, NY (2001).
5. https://en.wikipedia.org/wiki/Solar_System.
6. https://en.wikipedia.org/wiki/List_of_Indian_satellites

Syllabus for B.Sc., Mathematics & Physics effective from the year 2019-2020						
Year:	II Year		**Subject Code:**	U18NCH401	**Semester:**	IV
Part IV	**Title:** Chemistry in Daily Life - II (NME-II)					
Credits:	2			**Max. Marks:** 75		

Objective(s)	To introduce students to a breadth of ways in which chemistry impacts every aspect of modern life, from the food we eat to the clothes we wear, the way we communicate and work, the way we keep ourselves healthy and how we diagnose and treat those who aren't. Chemistry's role in our everyday life and how chemistry will impact on people's lives in the future.
Course Outcome(s)	
CO1	Acquire fundamental knowledge in preparations of cosmetics and their toxicology.
CO2	Gain the knowledge of using the chemicals as food in day to day life.
CO3	Understand the usage of chemicals as food production agents and their hazardous.
CO4	Understand the importance of plastics and their pollution.
CO5	Learn about the man made materials and their importance.

UNIT-I Common Drugs

Antibiotics, Antipyretics, Analgesics, Anti-inflammatory agents, Sedatives, Antiseptics, disinfectants, Antihistamines, Tranquilizers, Hypnotics and Antidepressant drugs - Definition, Examples, uses and side effects.

UNIT-II Colour chemicals and Food additives

Definition- Preservatives, Food colours - permitted and non-permitted. Artificial sweeteners, Emulsifying agents, Antioxidants. Artificial Sweetening agents – Saccharin – Cyclamate – Advantages and Disadvantages.

UNIT-III Chemicals in food production

Fertilizers used in natural sources - Fertilizers urea, NPK and Super phosphates need - uses and hazards. Biofertilizers and Pesticides – definition and examples.

UNIT-IV Plastic technology

Plastics, Polythene, PVC, Bakelite, Polyesters, Resins and their Applications. Natural Rubber - Synthetic rubbers - Vulcanisation - Preparation and its Applications. Environmental hazards of plastics.

UNIT – V Man made Materials

Colour chemicals – pigments and dyes, classification, examples and applications.

Raw materials and manufacturing process of Cement, and glass.

REFERENCES:

1. Chemical Process Industries (4^{th} Edition) R. Norris Shreve Joseph A.Brink,Jr.
2. Perfumes, Cosmetics and Soaps W.A.Poucher (Vol.3) Environmental Chemistry A.K.De.
3. B. Sreelakshmi, Food Science, New Age International, New Delhi, 2015.
4. Shashi Chowla; Engineering Chemistry, Danpat Rai Publication.
5. B.K. Sharma; Industrial Chemistry. Goel Publishing House, Meerut, 2003.
6. C.N.R. Rao; Understanding Chemistry, Universities Press.
7. M.K. Jain and S.C. Sharma; Modern Organic Chemistry, Vishal Pub. Co., Jalandhar, 2009.
8. V.R.Gowariker; N.V. Viswanathan and J. Sreedhar; Polymer Science, 2^{nd} edn., New Age, New Delhi, 2015.
9. P.C. Pall; K. Goel and R.K. Gupta; Insecticides, Pesticides and Argobased Industries.
10. Singh, K., Chemistry in Daily Life; Prentice Hall of India, New Delhi, 2008.

Syllabus for II B.Sc., Mathematics effective from the year 2019-2020						
Year:	II Year		**Subject Code:**	U18NZL401	**Semester:**	IV
Part IV	**Title:** Sericulture (NME-II)					
Credits:	2			**Max. Marks:** 75		

Objective: To impart training on silk worm culture technology
To create knowledge on self-employment opportunity

Course outcomes

At the end of the course the student will be able to	
CO1	To describe about the Taxonomy, Morphological sex differences in larva and adult.
CO2	To understand the culture of mulberry plants
CO3	To know about the culture methods of *B.mori and* mulberry silk
CO4	To describe the diseases and pests of *B.mori.* and Mulberry
CO5	To Study the quality of silk, silk gland and Markseting strategies of silk

UNIT – I

Classification of commercial varieties of mulberry. Biology of silk worm (*Bombyx mori*). Mulberry plantation establishment and cultivation practices.

UNIT – II

Diseases of mulberry – fungal, bacterial, viral and nematode diseases, deficiency diseases and their remedial measures.

UNIT – III

Silkworm rearing operations – Chawki rearing and late age rearing techniques.

UNIT – IV

Diseases of silk worm.Physical and commercial characters of cocoons. Reeling operations, importance of by – products of Sericulture.

UNIT – V

Economics of Sericulture – Sericulture prospects in India- Sericulture as Self Employment venture.

Reference Books:

Ganga, G. 2003: comprehensive sericulture Vol-l, Moriculture – Oxford –IBH Puubl. Co. India.

Ganga, G. 2003: comprehensive sericulture Vol –II Silkworm rearing – Oxford – IBH Publ. Co. India.

Ganga, G. and Sculochana Chetty, J. 1997: An Introduction to sericulture Oxford – IBH Publ. Co.

C.ABDUL HAKEEM COLLEGE (Autonomous), Melvisharam

Syllabus for Second year UG Programmes effective from the year 2018-2019

Class	: Second year UG Programmes	Semester	: IV
Subject Code	: U18NTA401	Title : Basic Tamil (Non Major-2)	
Credits	: 2	Max Marks	: 75

OBJECTIVES	தமிழ் மொழியின் அடிப்படை பண்புகளை அறிய வைத்து எளிய இலக்கண, இலக்கியப் பயிற்சிகளின் வழி மதிப்பீடு செய்தல்.
COURSE OUTCOME(S)	
CO1	தமிழ் அகராதிகளைப் பயன்படுத்தவும் எழுத்துக்களை நினைவில் கொள்ளவும் பயிற்சி வழங்கல். தமிழ்ச் சொற்களில் சந்திப்பிழை தவிர்க்க எளிய பயிற்சி வழங்கல்
CO2	தமிழில் உள்ள எளிய மற்றும் இனிய இலக்கியங்களை அறிமுகப்படுத்தி பொருளை விளக்குதல். எளிமையான சிறுகதைகளின் வழி வாசிப்புத் திறனை மேம்படுத்தல்.
CO3	கலைச் சொற்களையும் ,மரபுத் தொடர்புகளையும் மொழிபெயர்த்தல்

பாடத்திட்டம்

அலகு–I எழுத்து

1.அகர வரிசையில் அமைத்தல் (ஒவ்வொன்றிற்கும் 10 பெயர்கள்)

தமிழ் மாதங்கள், தமிழ்ப் புலவர்கள், தமிழக ஊர்கள் , தலைவர்கள், தமிழ் நூல்கள்,

2. பிழை நீக்கி எழுதுதல்

1..ஆளும் வேளும் பல்லுக்கு உறுதி
2. ஆரம் செய விரும்பு
3.பனிவுடைமை நல்ல பன்பு
4. எண்ணை குலியல் நல்லது
5.இங்கு விரகு விற்க்கப்படும்
6. நூன் பள் மருத்துவரைப் பார்த்தேன்
7.பேரூந்து நிருத்தும் இடம்
8. உணக்கு உனவு தேவையா?
9.கம்பண் வீட்டுக் கட்டுத்தரியும் கவி பாடும்
10. ஐந்திள் வலையாதது ஐம்பதில் வளையுமா?

அலகு–II

(அ) சேர்த்து எழுதுதல் : சுட்டு, வினா, திசைப் பெயர் - அடிப்படையிலான சொற்கள்

எ.கா : அ + இடம் = அவ்விடம், எ + பையன் = எப்பையன், வடக்கு+ மேற்கு=வடமேற்கு

(ஆ) பிரித்து எழுதுதல் : கனி, மரம் - அடிப்படையிலான சொற்கள்

எ.கா : வாழை + பழம் = வாழைப்பழம் மரம் + வேர் = மரவேர்

(இ) எதிர்ச்சொல் தருதல் : பண்பு அடிப்படையிலான சொற்கள்

எ.கா : நன்மை X தீமை நல்ல X கெட்ட உயரம் X குட்டை .

அலகு–III செய்யுள்

(அ) ஆத்திசூடி (முதல் 12 செய்யுள்)

(ஆ) திருக்குறள் (குறள் எண்கள் : 10, 15, 82, 398, 788)

(இ) கவிமணி - நூறு வயது தருவன

அலகு–IV சிறுகதை

1. கொடிக்குக் காய் பாரமா ?
2. மூன்று பொற்காசுகள்

அலகு–V(அ) தமிழில் மொழிபெயர்க்க

Cell phone , Computer, Television, Demand Draft, E- Mail, Environment, Fax, Internet,

Post office , xerox. Encyclopedia, fond, Laptop, Soft copy, file , car, lorry,

(ஆ) நேர் காணல்

கலைத் துறையினர், அரசியல் தலைவர், விளையாட்டு வீரர், அறிவியல் அறிஞர்

Syllabus for II B.Sc., Mathematics effective from the year 2019-2020						
Year:	II Year		**Subject Code:**	U18NUR401	**Semester:**	IV
Part IV	**Title:** Functional Urdu (NME-II)					
Credits:	2				**Max. Marks:** 75	

OBJECTIVES:	✓ To advance students' knowledge of Urdu. ✓ To impart training in Urdu Composition. ✓ To brief them about Urdu poetry.
COURSE OUTCOMES	➢ Students will learn Urdu equivalents of important Nomenclature. ➢ They will develop interest in Urdu poetry. ➢ They will acquire the ability to translate technical terms.

Unit I

Basics of Urdu Grammar

Unit II

Names of flowers, fruits,
birds, colours & Vegetables.

Unit III

Composition
(A short paragraph consisting of four or five simple sentences).

Unit IV

Two simple poems.

Unit V

Translation
(Technical terms and a passage).

Syllabus for III B.Sc. Mathematics effective from the year 2018-2019						
Year:	III Year		**Subject Code:**	U18MMA501	**Semester:**	V
Part III	**Title:** Abstract Algebra					
Credits:	4				**Max. Marks:** 75	

CORE PAPER – 7

Objectives: To enable the students to acquire the basic knowledge in group theory and ring theory.

Course Outcome: At the end of the Course, the Students will able to	
CO1	Identify whether the given abstract structure is group or not.
CO2	Apply the concepts of homomorphism and isomorphism for comparing the algebraic features of mathematical systems in groups and rings.
CO3	Define an automorphism of a group, symmetric group, ring and some special classes of rings like commutative ring, fields.
CO4	Compare the similarities and differences between group and ring theory and also classify whether or not the given ideal is prime or maximal.

UNIT-I: Groups
Definition of a Group - Examples – Subgroups – Cyclic groups

Chapter-2: Sections 2.1-2.4

UNIT-II: Groups (Contd.)
A Counting Principle - Normal Subgroups and Quotient groups - Homomorphisms.
Chapter-2: Sections 2.5-2.7 (Omit Applications 1 and 2 of 2.7)

UNIT-III: Groups (Contd.)
Automorphisms - Cayley's Theorem - Permutation Groups.

Chapter-2: Sections 2.8-2.10

UNIT-IV: Rings
Definition and Examples- Special classes of rings - Homomorphism of Rings - Ideals and Quotient Rings.

Chapter-3: Sections 3.1 - 3.4

UNIT-V: Rings (Contd.)
Prime Ideal and Maximal Ideal - The field of quotients of an Integral domain – Euclidean rings.

Chapter-3: Sections 3.5 -3.7

Recommended Text

I.N.Herstein. (1989) Topics in Algebra, (2nd Edn.) Wiley Eastern Ltd. New Delhi.

Reference Books

1. S.Arumugam. (2004) Modern Algebra. Scitech Publications, Chennai.

2. J.B.Fraleigh (1987). A First Course in Algebra (3rd Edition) Addison Wesley, Mass. (Indian Print)

3. Lloyd R.Jaisingh and Frank Ayres, Jr. (2005) Abstract Algebra, (2nd Edition), Tata McGraw Hill Edition, New Delhi.

4. M.L.Santiago (2002) Modern Algebra, Tata McGraw Hill, New Delhi.

Syllabus for III B.Sc. Mathematics effective from the year 2018-2019						
Year:	III Year		**Subject Code:**	U18MMA502	**Semester:**	V
Part III	**Title:** Real Analysis – I					
Credits:	4				**Max. Marks:** 75	

CORE PAPER – 8

OBJECTIVES	✓ To facilitate the basic concepts of real valued functions, countability and least upper bound. ✓ To enable students to learn sequences and series of real numbers and tests for their convergence in detail. ✓ To introduce the concept of metric space and continuous functions
Course Outcome: At the end of the Course, the Students will able to	
CO1	Identify whether the subset of R is countable or not
CO2	Classify whether the given sequence is convergent or divergent or oscillate and relate Cauchy sequence and convergence sequence in R
CO3	Test whether the given series absolute convergent or not.
CO4	Examine the continuity of a function on R and on the metric spaces.

UNIT-I: Functions & Sequences

Functions – Real valued functions – Equivalence – Countability and Real Numbers – Least Upper Bound – Definition of Sequence and Subsequence – Limit of a Sequence – Convergent Sequence.

Chapter -1: Sections: 1.4 to 1.7,

Chapter-2: Sections: 2.1 to 2.3.

UNIT-II: Sequences [Contd...]

Divergent Sequences – Bounded Sequences – Monotone Sequence – Operations on Convergent Sequences – Operations on Divergent Sequences – Limit Superior and Limit Inferior – Cauchy Sequences.

Chapter-2: Sections: 2.4 to 2.10.

UNIT-III: Series of Real Numbers

Convergence and Divergence – Series with non-negative terms – Alternating series – conditional convergence and Absolute convergence – Test for Absolute convergence.

Chapter-3: Sections: 3.1 to 3.4 and 3.6.

UNIT-IV: Series of Real Numbers [Contd...]

Series whose terms form a non-increasing sequence – The class ℓ^2 – Limit of a function on the real line – Metric spaces – Limits in Metric spaces.

Chapter-3: Sections: 3.7, 3.10,

Chapter-4: Sections 4.1 to 4.3.

UNIT-V: Continuous Functions on Metric Spaces

Functions Continuous at a point on the real line – Reformulation – Functions Continuous on a Metric Spaces – Open Sets – Closed Sets.

Chapter-5: Sections: 5.1 to 5.5.

Recommended Text

R.Goldberg [2000] Methods of Real Analysis. Oxford & IBH Publishing Co., New Delhi.

Reference Books

1. Tom M.Apostol [1974] Mathematical Analysis, 2nd Edition, Addison-Wesley New York.

2. Bartle, R.G. and Shebert [1976] Real Analysis, John Wiley and Sons Inc., New York.

3. Malik, S.C. and Savita Arora [1991] Mathematical Analysis, Wiley Eastern Limited, New Delhi.

4. Sanjay Arora and Bansi Lal [1991], Introduction to Real Analysis, Satya Prakashan, New Delhi.

Syllabus for III B.Sc. Mathematics effective from the year 2018-2019						
Year:	III Year		**Subject Code:**	U18MMA503	**Semester:**	V
Part III	**Title:** Complex Analysis					
Credits:	4			**Max. Marks:** 75		

CORE PAPER – 9

Objectives:

- ✓ To make the students familiar with basic concepts of theory of complex functions.
- ✓ To extend the idea of integration in the complex field by using residues and evaluating contour integrals.

Course Outcome: At the end of the Course, the Students will able to	
CO1	Define continuity, differentiability and analyticity of a complex valued function which helps the students to identify analytic functions.
CO2	Analyze the effect of Bilinear Transformation on the complex plane and describe some important special Bilinear Transformations.
CO3	Compute the Taylor and Laurent expansions of simple functions and determine the nature of the singularities.
CO4	Calculate the residues of a function and use the Cauchy's theorem, Cauchy's integral formula and Residue theorem to evaluate a contour integral.

UNIT-I: Analytic functions

Definition of function of a complex variable- Limits – Continuity-Derivatives and Differentiation formula-Cauchy-Riemann equations in Cartesian and polar Coordinates - properties of Analytic functions-Necessary and Sufficient conditions for Analytic functions-Harmonic functions -Determination of Harmonic conjugate and Analytic functions.

Chapter: 2 (Full)

UNIT-II: Mappings

The transformations $w = z + d, w = \frac{1}{z}, w = z^2, w = \sqrt{z}, w = e^z, w = \sin z$ - Bilinear Transformation and special Bilinear Transformation - Conformal mapping.

Chapter: 7 Section: 63 to 68, 70 and 71

Chapter: 8 Section: 74 only

UNIT-III: Integrals

Contours - line Integrals – Cauchy-Goursat's Theorem (without proof) – Cauchy's Integral Formula – Derivatives of Analytic Functions – Morera's theorem –Maximum moduli of functions - Liouville's theorem - Cauchy's inequality - Fundamental theorem of algebra.

Chapter: 4 Section: 30 to 33, 38 to 42

UNIT-IV: Power Series

Taylor's and Laurent's Theorems – Singularities and classification – Problems.

Chapter: 5 Section: 44 to 46
Chapter: 12 Section: 106 to 108

UNIT-V: Residues and Poles

Residues – Cauchy's Residues Theorem – Evaluation of real improper integrals – improper integrals involving sine and cosine.

Chapter: 6 Section: 54 to 55, 57 to 60

Recommended Text

Ruel V.Churchill and James Ward Brown, (1984) Complex Variables and Applications. McGraw Hill International Book Co., Singapore, (Fourth Edition).

Reference Books

1. P. Duraipandian and Laxmi Duraipandian (1976) Complex Analysis: Emerald Publishers, Chennai.
2. S. Ponnusamy. (2000) Foundations of Complex Analysis, Narosa Publishing House, New Delhi.
3. Murray R. Spiegel. (2005) Theory and Problems of Complex Variable. Tata-Mcgraw Hill Edition, New Delhi.
4. S.G. Venkatachalapathy, Complex analysis (2009).

Syllabus for III B.Sc. Mathematics effective from the year 2018-2019						
Year:	III Year		**Subject Code:**	U18MMA504	**Semester:**	V
Part III	**Title:** Graph Theory					
Credits:	4				**Max. Marks:** 75	

CORE PAPER – 10

Objectives: To enable the students to learn the fundamental concepts of Graph theory

Course Outcome: At the end of the Course, the Students will able to	
CO1	Recognize the characteristics of graph
CO2	Convert the graph into matrix form and explain operations on graphs
CO3	Analyze special graphs like Eulerian graphs and Hamiltonian graphs with examples
CO4	Describe planar graphs and identify the chromatic number of the graph.

UNIT-I Graphs and Subgraphs

Graphs and subgraphs -definition and examples-degree of a vertex-Isomorphism of graphs-Independent sets and coverings-Intersection graphs-matrices.

Chapter: 2 (sections: 2.1 – 2.4 & 2.6-2.8) Omit section: 2.5 only

UNIT-II Operations on Graphs and Connectedness

Operations on graphs - Walks; trails; paths. Connectedness and components- blocks.

Chapter: 2 (section: 2.9 only)
Chapter: 4 (sections: 4.1 - 4.3)

UNIT-III Connectivity and Eulerian graphs and Hamiltonian graphs

Connectivity theorems and solved problems. Eulerian graphs and Hamiltonian graphs-solved problems.

Chapter: 4 (section: 4.4 only)
Chapter: 5 (sections: 5.1 – 5.2)

UNIT-IV Trees and Planarity of graphs

Trees-characterization of trees- centre of a tree-solved problems. Planarity – definition and properties- characterization of planar graph.

Chapter: 6 (sections: 6.1 – 6.2)
Chapter: 8 (sections: 8.1 – 8.2), Omit section: 8.3 only

UNIT-V Colourability and Directed graphs

Colourability – chromatic number and chromatic index. Directed graphs –Definitions and basic properties – paths and connections-digraphs and matrices

Chapter: 9 (section: 9.1 only) omit sections: 9.2, 9.3, 9.4
Chapter: 10 (sections: 10.1 – 10.3) Omit section: 10.4

Recommended Text

S.Arumugam and S.Ramachandran, "Invitation to Graph Theory", SCITECH Publications India Pvt. Ltd., Chennai – 17.

Reference Books

1. S. Kumaravelu, Susheela Kumaravelu, Graph Theory, Publishers, 182, Chidambara Nagar, Nagercoil-629 002.

2. S.A.Choudham, A First Course in Graph Theory, Macmillan India Ltd.

3. Robin J.Wilson, Introduction to Graph Theory, Longman Group Ltd.

4. J.A.Bondy and U.S.R. Murthy, Graph Theory with Applications, Macmillon, London.

Syllabus for III B.Sc. Mathematics effective from the year 2018-2019						
Year:	III Year		**Subject Code:**	U18EMA501	**Semester:**	V
Part III	**Title:** Mathematical Statistics					
Credits:	3				**Max. Marks:** 75	

ELECTIVE PAPER – 1

Objectives: To enable the students to acquire the knowledge of statistics.
To make the students understand various characteristics of discrete and continuous statistical distributions with mathematical techniques.

Course Outcomes : At the end of the Course, the Students will able to	
CO1	Describe the concepts of Random Variables & Distribution Function with examples.
CO2	Evaluate expectation, variance, moment generating function of some important distribution functions. .
CO3	Analyze discrete and continuous data through measures of central tendency and measures of dispersions.
CO4	Analyze design of experiments.

UNIT-I: Random Variables

Discrete Random Variable – Continuous Random Variable – Cumulative Distribution – Properties of Distribution Function – Examples – Function of a Random Variable – Two Dimensional random Variable – Marginal probability Distribution – Conditional Probability Distribution – Independent Random Variables – Examples.
Chapter 2: Full.

UNIT-II: Mathematical Expectation

Expectation or Mean Value – Examples – Properties of Expected Values – Examples.
Chapter 3: Full.

UNIT-III: Variance

Variability or Dispersion – Range – Mean Deviation – Properties of Variance – Examples – Tchebechev Inequality – Examples.
Chapter 4: Full.

UNIT-IV: Moments and Moment Generating Function

Central Moments in terms of Moments about origin – Moment Generating Function – Properties of Moment Generating Function – Examples.
Chapter 5: Full.

UNIT-V: Design of Experiments

Experimental Units – Basic Principles in the Design of Experiments – Complete Block Designs – Completely Randomized Design – Randomized Block Design – Latin Square Design – Analysis of Latin Square Design – Merits and Demerits: Completely Randomized Design, Randomized Block Design and Latin Square Design.
(Only Theory Part). (Omit Factorial Experiments).
Chapter 28: Full

Recommended Text

P. R. Vittal, Mathematical Statistics, Margham Publications, Chennai, 2017.

Reference Books

1. S.C. Gupta & V.K. Kapoor, Fundamentals of Mathematical Statistics, S. Chand Publishers.
2. G.W. Snedecor & W.R. Cochran (1967), Statistical Methods, Oxford and IBH.
3. R.V. Hogg & A.T. Craig (1998), Introduction to Mathematical Statistics Macmillan Publications.

Syllabus for III B.Sc. Mathematics effective from the year 2018-2019						
Year:	III Year		**Subject Code:**	U18EMAP51	**Semester:**	V
Part III	**Title:** Mathematical Statistics (Practical)					
Credits:	1				**Max. Marks:** 75	

CORE PRACTICAL-IV

Objectives:	To make the students familiarize in Standard statistical problems.

Course Outcomes: At the end of the Course, the Students will able to	
CO1	Practice the statistical problems using curve fitting , Measures of averages and dispersion.
CO2	Design the Experiments and solve the problems using suitable ANOVA .

1. Curve Fitting : $y = ax + b$, $y = ax^2 + bx + c$, $y = ax^b$, $y = ae^{bx}$.
2. Measures of Averages & Dispersion:
   Mean, Median, Mode, Range, Mean Deviation, Quartile Deviation, Standard Deviation.
3. Measures of Skewness:
   Pearson's Coefficient of Skewness
   Bowley's Coefficient of Skewness
4. Spearman's Rank Correlation and Correlation Coefficient.
5. Analysis of Variance: One-Way and Two-Way Classification.
6. Completely Randomized Design.
7. Randomized Block Design.
8. Latin Square Design.

Reference Books

1. P. R. Vittal, Mathematical Statistics, Margham Publications, Chennai, 2017.
2. S.C. Gupta & V.K. Kapoor, Fundamentals of Mathematical Statistics, S. Chand Publishers.
3. G.W. Snedecor & W.R. Cochran (1967), Statistical Methods, Oxford and IBH.
4. R.V. Hogg & A.T. Craig (1998), Introduction to Mathematical Statistics Macmillan Publications.

Syllabus for III B.Sc. Mathematics effective from the year 2018-2019						
Year:	III Year		**Subject Code:**	U18EMA502	**Semester:**	V
Part III	**Title:** Operations Research					
Credits:	3				**Max. Marks:** 75	

Objectives: This Course aims to study the network problems, inventory models, linear programming problems, queuing models and replacement models in the real-life situations.

Course Outcome: At the end of the Course, the Students will able to	
CO1	Solve the Network problems by using CPM and PERT methods.
CO2	Identify EOQ of inventory models and when to replace an item in the replacement problems.
CO3	Describe the fundamental concepts of theory of Simplex method.
CO4	Compute the steady state probabilities for various queuing models.

UNIT-I

Network scheduling by CPM/PERT – Project network diagram – Critical path method (CPM) – PERT Computations.

Chapter: 20 (full)

UNIT-II

Inventory models - EOQ :

(a) Uniform demand rate: infinite production with no shortages

(b) Uniform demand rate: finite production with no shortages – Inventory control with Price Breaks.

Chapter: 18 (sections: 18.3, 18.3.1, 18.3.2, 18.7)

UNIT-III

Theory of Simplex Method: Canonical and Standard form of LPP - Slack and Surplus Variables - Reduction of any Feasible solution to a Basic Feasible solution - Alternative Optimal solution - Unbounded solution - Optimality conditions - Some complications and their resolutions - Degeneracy and its resolution

Chapter: 25 (sections: 25.2 – 25.4, 25.6 - 25.8, 25.9(25.9.2))

UNIT-IV

Queuing Theory - Basic concepts - Steady state analysis of M/M/1 and M/M/N systems with finite and infinite capacities.

Chapter: 16 (Full)

UNIT-V

Replacement problem – Introduction – replacement of items that deteriorate with time – replacement of items that fail completely.

Chapter: 17 (sections: 17.1 – 17.4)

Recommended Text:

For Unit I, II, IV, V

1. Gupta P.K. and Hira D.S. (2003) Problems in Operations Research, S.Chand & Co. Delhi

For Unit III

2. J.K.Sharma, (2007) Operations Research: Theory and Applications, Macmillan, Delhi.

Reference Books

1. Kanti Swaroop, Gupta P.K. and Manmohan, (1999) Problems in Operations Research, Sultan Chand & Sons., Delhi.
2. V.K.Kapoor [1989] Operations Research, sultan Chand & sons.
3. H.A. Taha (2003) Operations Research, Macmillan Publishing Company, New York.
4. P.R.Vittal (2003) Operations Research, Margham Publications, Chennai.
5. S.J.Venkatesan, Operations Research, J.S. Publishers, Cheyyar-604 407.
6. Arumugam & Issac, Operations research - Vol. - I, New Gamma Pub., House. Palayamkottai.

Code	Course	L	T	P	Cr	Marks
U18EINP51	**Internship**	**0**	**0**	**0**	**2**	**100**
Objectives: Internships are educational and career development opportunities, providing practical experience in a field or discipline.						
Course Outcome : At the end of the course, the student can able to						
CO1	Apply knowledge of theoretical concepts, tools and resources.					
CO2	Analyze and solve complex problems in order to reach substantiated conclusions.					

Instructions for Internships

1. **Internship –**
   - **a.** Internship with Industry/ Govt. / NGO/ PSU/Any Micro/Small/Medium enterprise/ Online Internship
   - **b.** Inter/Intra Institutional Activities **–** Inter/ Intra Institutional Workshop/ Training/ Working for consultancy/ research project
2. **Suggested Periods –** During summer vacation after 4th semester.
3. **Duration –** 2 Weeks
4. **Proposed document to be submitted as evidence –** Internship Report and Certificate

Internship Report:

After completion of Internship, the student should prepare a comprehensive report to indicate what he has observed and learnt in the training period. The student may contact Industrial Supervisor/ Faculty Mentor for assigning special topics and problems and should prepare the final report on the assigned topics. Daily diary will also help to a great extent in writing the industrial report since much of the information has already been incorporated by the student into the daily diary. The training report should be signed by the Internship Supervisor and Faculty Mentor.

5. **Evaluation Method –** Viva-voce Examination by the Faculty mentor and Faculty from other department.

Internal: 25 Marks (For attendance)
External: 75 Marks (Internship report)

The Internship report will be evaluated on the basis of following criteria:

i. Originality **(15)**.
ii. Adequacy and purposeful write-up **(15)**.
iii. Organization, format, drawings, sketches, style, language etc **(15)**.
iv. Variety and relevance of learning experience **(15)**.
v. Practical applications, relationships with basic theory and concepts taught in the course **(15)**.

Note: Internships may be full-time or part-time; they are full-time in the summer vacation and part-time during the academic session.

Syllabus for III B.Sc. Mathematics effective from the year 2018-2019						
Year:	III Year		**Subject Code:**	U18SMA501	**Semester:**	V
Part III	**Title:** Quantitative Techniques					
Credits:	3				**Max. Marks:** 75	

SKILL PAPER – 3

Objectives:	✓ To enable the students to solve practical problems in various fields by using statistical methods. ✓ To develop the computational skills in formulating and solving an industry oriented problems as a mathematical problem.

Course Outcomes: At the end of the Course, the Students can able to	
CO1	Justify the control limits for attributes and variables with examples.
CO2	Apply the Laspeyre's, Paasche's, Marshall edge worth price index and Irving fisher's ideal to find index numbers with examples.
CO3	Classify the trend line by using various methods in time series analysis with examples.
CO4	Analyze the concept of demand analysis with problems and Calculate optimal order of a sequence in several machines.

UNIT–I: Statistical Quality Control

Introduction – Statistical quality control – Process control and Product control – Control charts – Tools for S.Q.C – Control charts for variables – Control charts for mean and range – Control charts for attributes.

Chapter 1: Sections: 1.1 – 1.9 (Omit subsection: 1.8.4 and Omit examples: 1.7, 1.8 &1.9)

UNIT–II: Index Numbers

Introduction – Construction of index number: Simple (unweighted) aggregate method, weighted aggregate method – Laspeyre's, Paasche's, Marshall edgeworth price index, Irving Fisher's ideal index number – Average of price relatives, Chain base method– The criteria of a good index number– Classification of index numbers–Uses and limitations of index numbers.

Chapter 3: Sections: 3.1 – 3.5, 3.9, 3.10
(Omit subsections: 3.4.5, 3.5.3 and Omit examples: 3.7, 3.8, 3.9, 3.10& 3.11)

UNIT–III: Analysis of Time Series:

Introduction – Components of time series – Analysis of time series – Measurement of trends.

Chapter 2: Sections: 2.1 – 2.4 (Omit subsections: 2.4.4, 2.4.6)

UNIT–IV: Demand Analysis:
Demand and supply – laws of demand and supply – price elasticity of demand and supply – partial and cross elasticities of demand.

Chapter 4: Sections: 4.1 – 4.4

UNIT–V: Sequencing Problem:
Sequencing problem – n jobs through 2 machines, n jobs through 3 machines - two jobs through m machines – n jobs through m machines.

Chapter 12: Sections: 12.1 – 12.6

(Importance to be given only to simple problems)

Recommended Text

1. S.C. Gupta and V.K. Kapoor, Fundamentals of Applied Statistics, S. Chand& Co., Delhi(For Unit I, II, III, IV)
2. P.K. Gupta and D.S. Hira (2003) Problems in Operations Research, S. Chand & Co. Delhi (For Unit V).

Reference Books

1. P.R.Vittal, Business Statistics & Operations Research, Margham Publications, Chennai.

2. P.Kandasamy and others, Probability statistics and queuing theory, Sultan Chand & Sons.

3. V.Sundaresan, K.S. Ganapathy Subramanian and K.Ganesan, Resource management techniques, Meenakshi Pub., Arapakkam-609111.

4. Arumugam & Issac, Linear programming, New Gamma Pub., House Palayamkottai.

Syllabus for III B.Sc. Mathematics effective from the year 2018-2019						
Year:	III Year		**Subject Code:**	U18MMA601	**Semester:**	VI
Part III	**Title:** Linear Algebra					
Credits:	4			**Max. Marks:** 75		

CORE PAPER – 11

Objectives: To enable the students to acquire the basic knowledge of vector spaces and linear transformations.

Course Outcome: At the end of the Course, the Students will able to	
CO1	Define vector space, Linear independence and compute the bases and dimension of vector spaces.
CO2	Prove the properties of dual and inner product spaces and compute an orthonormal basis for finite dimensional vector spaces.
CO3	Apply the concepts of linear transformation like algebra of linear transformations, Cayley Hamilton Theorem, characteristic roots and characteristic vectors.
CO4	Relate the linear transformation with matrices and explain the properties of trace, transpose and determinant of a matrix of a linear transformation.

UNIT-I: Vector Spaces

Definition and examples-Linear Independence and bases.

Chapter-4: Sections: 4.1, 4.2

UNIT-II: Vector Spaces (Contd.)

Dual spaces - Inner Product spaces.

Chapter-4: Sections: 4.3, 4.4

UNIT-III: Linear Transformation

Algebra of linear transformations - Characteristic roots.

Chapter-6: Sections 6.1, 6.2

UNIT-IV: Linear Transformation (Contd.)

Matrices, Canonical forms: Triangular forms.

Chapter-6: Sections: 6.3, 6.4

UNIT-V: Linear Transformation (Contd.)

Trace and Transpose, Determinants.

Chapter-6: Sections: 6.8, 6.9

Recommended Text

I.N.Herstein. (1989) Topics in Algebra. Wiley Eastern Ltd. New Delhi.

Reference Books

1. S.Arumugam. (2004) Modern Algebra, Scitech Publications, Chennai.

2. J.B.Fraleigh (1986) A First Course in Algebra (3rd Edition) Addison Wesley. Mass. (IndianPrint)

3. S.Lipschutz (2005) Beginning Linear Algebra, Tata McGraw Hill Edition, New Delhi.

4. M.L.Santiago. (2002) Modern Algebra, Tata McGraw Hill, New Delhi.

Syllabus for III B.Sc. Mathematics effective from the year 2018-2019						
Year:	III Year		**Subject Code:**	U18MMA602	**Semester:**	VI
Part III	**Title:** Real Analysis - II					
Credits:	4				**Max. Marks:** 75	

CORE PAPER – 12

Objectives	✓ To introduce the concepts of open sets, closed sets, connected and bounded sets in a metric space. ✓ To enable the students to know about completeness, compactness, derivatives and Riemann integration.
Course Outcome: At the end of the Course, the Students will able to	
CO1	Define connected sets in R and complete metric space.
CO2	Distinguish continuity and uniform continuity with examples and infer the compactness in continuity.
CO3	Analyze the Riemann integral and its properties, apply the Rolle's theorem.
CO4	Show the difference between point wise convergence and uniform convergence.

UNIT-I: Connectedness and Completeness

Open Sets – Connected Sets – Bounded Sets and Totally Bounded Sets – Complete Metric Spaces.

Chapter-6: Sections: 6.1 to 6.4

UNIT-II: Compactness

Compact Metric Space – Continuous Functions on Compact Metric Spaces - Continuity of Inverse Functions – Uniform Continuity.

Chapter-6: Sections: 6.5 to 6.8

UNIT-III: Riemann Integration

Sets of measure zero - Definition Riemann Integral – Properties of Riemann Integral – Derivatives.

Chapter-7: Sections: 7.1, 7.2 7.4, 7.5.

UNIT-IV: Riemann Integration [Contd...]

Rolle's Theorem – The law of mean – Fundamental theorems of calculus – Taylor's theorem.

Chapter-7: Sections: 7.6 to 7.8 and 8.5

UNIT-V: Sequences and Series of Functions

Point wise convergence of sequences of functions – Uniform convergence of sequences of functions – consequences of uniform convergence – Convergence and uniform convergence of series of functions.

Chapter-9: Sections: 9.1 to 9.4

Recommended Text

R. Goldberg, Methods of Real Analysis, Oxford & IBH Publishing Co., New Delhi.

Reference Books

1. Tom M. Apostol [1974] Mathematical Analysis, 2nd Edition, Addison-Wesley Publishing Company Inc. New York.
2. R.G. Bartle, and Shebert [1976] Real Analysis, John Wiley and Sons Inc., New York,
3. S.C. Malik, and Savita Arora [1991] Mathematical Analysis, Wiley Eastern Limited, New Delhi.
4. Sanjay Arora and Bansi Lal [1991] Introduction to Real Analysis, Satya Prakashan, New Delhi.

Syllabus for III B.Sc. Mathematics effective from the year 2018-2019						
Year:	III Year		**Subject Code:**	U18MMA603	**Semester:**	VI
Part III	**Title:** Mechanics					
Credits:	4			**Max. Marks:** 75		

CORE PAPER – 13

Objectives:

- ✓ This course aims to provide models for some real life problems which also covers topics like forces, moments, mass center, Projectiles, Central Orbits and Moment of Inertia.
- ✓ This course stresses the mathematical formulation of the physics aspects of the problems and it develops logical deduction and interpretation.

Course Outcome: At the end of the Course, the Students will able to	
CO1	Apply Newton's laws of motion for finding the resultant of forces.
CO2	Compute the center of mass of different shapes and moments of inertia of different objects.
CO3	Establish the concepts of Projectiles.
CO4	Describe the concepts of direct and oblique impacts with examples.

UNIT- I

Force: Newton's laws of motion: Forces - Type of forces, Resultant of two forces on a particle: Resultant of three forces related to triangle acting at a point - Resultant of several forces acting on a particle.

Equilibrium of a particle: Equilibrium of a particle under three forces -Equilibrium of a particle under several forces, Limiting Equilibrium of a particle on an inclined plane.

Chapters: 2 & 3(Full)

UNIT- II

Forces on a Rigid Body: Moment of a force- General motion of a rigid body- Equivalent system of forces - Parallel force- Forces along the sides of the triangle.

Center of mass: Center of mass -Finding mass Center not using integration and using integration – mass centre of a non-homogeneous solid.

Chapter: 4(4.1 to 4.5)

Chapter: 6 (Omit 6.2.4 & 6.3)

UNIT- III

Projectiles: Forces on a projectile- Projectile projected on an inclined plane – Enveloping parabola or bounding parabola.

Chapter: 13(Full)

UNIT - IV

Impact: Impulsive force: Conservation of linear momentum, Impact of a sphere: Laws of impact, Impact of two smooth spheres: Direct impact and Oblique impact, Direct impact of a smooth sphere on a plane, Oblique impact of a smooth sphere on a plane, Simple problems.

Chapter: 14 (Full)

UNIT- V

Central Orbits: General Orbits, Central Orbit, Conic as a centered orbit.

Moment of Inertia: Moment of Inertia of simple bodies, theorems of parallel and perpendicular axes, moment of inertia of triangular lamina, circular lamina, circular ring, right circular cone, sphere. Simple problems.

Chapter: 16 (Full)

Chapter: 17(Full)

Recommended Text

P. Duraipandian, Laxmi Duraipandian , Muthamizh Jayapragasam, Mechanics, S. Chand and Company Ltd, 2005.

Reference Books

1. S. Narayanan, R. Hanumantha Rao, K. Sitaraman, P. Kandaswamy, Statics, S. Chand and Company Ltd, New Delhi.

2. S. L. Loney, An Elementary Treatise on Statics, Cambridge University Press, 1951

3. A.V. Dharmapadam (1991) Mechanics. S. Viswanathan Printers & Publishers. Chennai.

4. M.K. Venkataraman (1990) Statics. A Rajhans Publications. (16th Edn), Meerut.

Syllabus for III B.Sc. Mathematics effective from the year 2018-2019						
Year:	III Year		**Subject Code:**	U18MMA604	**Semester:**	VI
Part III	**Title:** Programming in C language					
Credits:	3			**Max. Marks:** 75		

CORE PAPER – 14

Objectives: To develop programming skills in C Language and make them to solve Numerical & Mathematical problems.

Course Outcome: At the end of the Course, the Students will able to	
CO1	Describe the basic concepts of C with examples.
CO2	Define the different types of operators and expressions with examples.
CO3	Create programs using different loops and subprograms.
CO4	Write the optimized programs using pointers.

UNIT-I

Constants, variables, Data - type, Declaration of variables, Declaration of storage class, Assigning values to variables.

Chapter: 2 (2.5 to 2.10)

UNIT-II: Operators

Arithmetic, Relational, Logical, Assignment, Increment and decrement, Conditional, Bitwise, Special Operators, Arithmetic Expressions, Evaluation of Expressions, Precedence of Arithmetic operators, Formatted input and output.

Chapter: 3 (3.1 to 3.12)

Chapter: 4 (4.4 and 4.5)

UNIT-III: Decision making

Decision making with Branching: Decision making with IF statement, Simple IF Statement, the IF… ELSE statement, Nesting of IF…ELSE statement, The ELSE - IF ladder, Switch statement, the ?: operator, Go to statement.

Decision making with Looping: The WHILE statement, The DO statement, The FOR statement, Jumps in loops, concise test expressions.

Chapter: 5, 6 (Full)

UNIT-IV: Arrays and User-Defined Function

Arrays: One - dimensional arrays, Declaration of One - dimensional arrays, Initialization of One - dimensional arrays, Two - dimensional arrays, Initializing Two -dimensional arrays, Multi - dimensional arrays.

User-defined functions: Need for User-defined functions, A Multi-function program, Elements of user - defined functions, Definition of Function, Return Values and their Types, Function Calls, Function Declaration, Category of functions, No Arguments and no Return Values, Arguments and no Return Values, Arguments with Return Values, No Argument but Return a Value.

Chapter: 7 (7.1 to 7.7)

Chapter: 9 (9.1 to 9.13)

UNIT-V: Pointers

Understanding Pointers, Accessing the address of a variable, Declaring Pointer Variables, Initialization of pointer Variables, Accessing a variable through its pointer, Chain of Pointers, Pointer expression.

Chapter: 11 (11.1 to 11.8)

Recommended Text

E. Balagurusamy, Programming in ANSI C, Fifth Edition, Tata McGraw Hill, New Delhi.

Reference Books

1. V. Rajaraman. (1995) Computer Programming in C. Prentice Hall, New Delhi
2. H. Schildt, Obsborne. (1994) Teach Yourself C, McGraw Hill, New York.
3. Mullish Cooper. The Spirit of C- An Introduction to Modern Programming, Jaico Publishing House, Delhi. 1998.
4. Yashavant kanetkar, let us C, 16th edition, BPB publication.

Syllabus for III B.Sc. Mathematics effective from the year 2018-2019						
Year:	III Year		**Subject Code:**	U18MMAP61	**Semester:**	VI
Part III	**Title:** Programming in C language (Practical)					
Credits:	2				**Max. Marks:** 75	

CORE PRACTICAL-V

Objectives: To develop programming skills in C Language and make them to solve Numerical & Mathematical problems.

Course Outcome: At the end of the Course, the Students will able to	
CO1	Write C program for matrix manipulations.
CO2	Create C program for square of numbers using different Loops, Fibonacci series, Factorial of a number, power of a value.
CO3	Compose a C program for prime numbers and interchange sort.

1. Square of numbers: Using for loop, while loop
2. Square of numbers: Do-While loop, Go to statement.
3. Transpose of a Matrix.
4. Addition & subtraction of two matrices.
5. Product of two matrices.
6. Prime numbers between two give numbers.
7. Fibonacci series.
8. Factorial of numbers.
9. Power of a value.
10. Interchange sort.

Note: Mathematics faculty should be appointed as an Examiner.

Reference Books

1. The spirit of C, Mullish Cooper, Indian Edition by Jaico Publishers, 1987.
2. Teach yourself C, Herbert Schildt, Obsbome Mcgraw Hill, 2nd Edition 1994.
3. Programming in C, Schaum Series.

Syllabus for III B.Sc. Mathematics effective from the year 2018-2019						
Year:	III Year		**Subject Code:**	U18EMA601	**Semester:**	VI
Part III	**Title:** Calculus of Finite Differences and Numerical Methods					
Credits:	4				**Max. Marks:** 75	

ELECTIVE PAPER – 2

Objectives: 1. To Know about finite differences and its uses to interpolate the values for equal and unequal intervals.

2. To know and apply different numerical techniques to solve algebraic and differential equations.
3. To know methods of finding approximate values for definite integrals.

Course Outcomes: At the end of the Course, the Students will able to	
CO1	Compute the value and derivative of a function at a point in the given intervals by using appropriate interpolation methods.
CO2	Solve simultaneous linear equations by using Gauss elimination method, Matrix inversion method, Gauss- Jordan Method, Gauss-Seidal Method.
CO3	Evaluate the approximate value of the definite integral by utilizing Newton's and Gauss forward and backward differences formulae.
CO4	Locate the roots of the algebraic and transcendental equations in the specified interval and find their approximate solutions. Identify the numerical solution of the first order ordinary differential equations.

(Note: All the Formulae without Proof - Units I to V)

UNIT-I: Finite differences & Interpolation

Forward difference operator ▲ and Backward difference operator ▼ and shifting operator E, Relation between ▲, ▼and E - Interpolation - Newton - Gregory forward & backward formulae, Estimating the missing terms- Lagrange's and Newton's divided difference Formula for unequal intervals. Only Problems.

Chapter: 2 (2.1) page: 7 - 28

Chapter: 3 (3.1 – 3.3) page: 53 – 86

Chapter: 3(3.5) Page: 91 – 111.

UNIT-II: Solutions of simultaneous linear equations

Gauss elimination method - matrix inversion method - Gauss-Jordan Method, Gauss – Seidal method. Only Problems.

Chapter: 12 (12.6) Page: 394-405

Chapter: 13 (13.1 – 13.4) Page: 406-416.

UNIT-III: Numerical Differentiation
Newton's forward and backward differences formulae to compute derivatives - using Gauss forward and backward formulae.

Chapter: 5 Page: 151- 165.

UNIT-IV: Numerical Integration
General Quadrature formula - Trapezoidal rule - Simpson's one third rule - Simpson's three eight rule – Weddle's Rule.

Chapter: 6 (6.1) Page: 174 – 206.

UNIT-V: Solution of Algebraic and Transcendental Equations:
Bisection method - Regula - Falsi method (False Position method) - Newton-Raphson method. Numerical solution of ordinary Differential equation (First order only): Euler's method, modified Euler's method, Picard's method, Runge - Kutta method.

Chapter: 15 (15.4 – 15.5 & 15.8)
Chapter: 16 (16.1, 16.2, 16.4, 16.6, 16.7).

Recommended Text

B.D. Gupta. (2001) Numerical Analysis. Konark Pub. Ltd., Delhi.

Reference Books

1. H.C. Saxena, Calculus of finite differences and Numerical Analysis, S.Chand& Co., New Delhi. IX Edition.
2. M.K. Venkataraman. (1992) Numerical methods for Science and Engineering National Publishing Company, Chennai.
3. S. Arumugam (2003) - Numerical Methods, New Gamma Pub., for Palayamkottai.
4. A. Singaravelu, Numerical Methods, Meenakshi Publications-First Edition 1992.

Syllabus for III B.Sc. Mathematics effective from the year 2018-2019						
Year:	III Year		**Subject Code:**	U18EMA602	**Semester:**	VI
Part III	**Title:** Special Functions					
Credits:	4			**Max. Marks:** 75		

Objectives: To develop computational skill in certain special functions which are frequently occurring in higher mathematics and mathematical physics

Course Outcome: At the end of the Course, the Students will able to	
CO1	Explain the concept of linear operators and compute the numerical solution of Nonlinear equations.
CO2	Solve the problems using Adams and Modified Adams Method
CO3	Classify singular points of a Linear Second Order Differential equations (LSDE) and solve LSDE by using the Frobenius method
CO4	Describe the properties of Bessel Functions and Bessel Functions and Legendre polynomials.

UNIT-I

Properties of Linear Operators - Simultaneous Linear Differential Equations.

Chapter: 1 Sections: 1.7 and 1.8

UNIT-II

Special Solvable Types of Nonlinear Equations - Numerical Solutions Using Taylor Series.

Chapter: 1 Section: 1.12

Chapter: 3 Section: 3.2

UNIT-III

Adams and Modified Adams Method - Extrapolation with Differences - Properties of Power Series - Examples.

Chapter: 3 Sections: 3.3, 3.4 and 3.7

Chapter: 4 Section: 4.1

UNIT-IV

Singular Points of Linear Second Order Differential Equations - Method of Frobenius.

Chapter: 4 Sections: 4.3 and 4.4

UNIT-V

Bessel Functions - Properties – Legendre Functions.

Chapter: 4 Sections: 4.8 to 4.10 and 4.12

Recommended Text

F. B. Hildebrand. (1977) Advanced Calculus for Applications. Prentice Hall. New Jersey.

Reference Books

1. J.N. Sharma and R.K. Gupta (1998), Special Functions, Krishna Prakashan Mandir, Meerut.
2. Satya Prakash. (2004), Mathematical Physics, Sultan & Sons. New Delhi.
3. B.D. Gupta (1978), Mathematical Physics, Vikas Publishing House

Syllabus for III B.Sc. Mathematics effective from the year 2018-2019						
Year:	III Year		**Subject Code:**	U18SMA601	**Semester:**	VI
Part III	**Title:** Fundamentals of Applied Mathematics					
Credits:	3				**Max. Marks:** 75	

SKILL PAPER – 4

OBJECTIVES:	To make the students familiarize in recurrence relations, logic, Lattices and Boolean algebra.

Course Outcomes: At the end of the Course, the Students can able to	
CO1	Solve the homogeneous and non-homogeneous linear recurrence relations.
CO2	Formulate the logical statements and test whether the given statement is tautological or not.
CO3	Convert the normal forms into principal conjunctive normal forms and principal disjunctive normal forms.
CO4	Outline the properties of lattices and Demonstrate useful of Karnaugh Maps in Digital circuit.

UNIT-I: Recurrence Relations

Recurrence - Polynomials and their Evaluations - Recurrence Relations - Solution of Finite Order Homogeneous [linear] Relations - Solutions of Non-homogeneous Relations.

Chapter - V: Sections: 1 to 5.

UNIT-II: Mathematical Logic

TF Statements - Connectives - Atomic and Compound Statements - Well-formed [Statement Formulae] - Parsing Trees- Truth Table of a Formula - Tautology - Tautological Implications and Equivalence of Formulae.

Chapter - IX: Sections: 1 to 8.

UNIT-III: Mathematical Logic [Contd…]

Replacement process - Functionally complete sets of connectives and Duality law –Normal Forms - Principal Normal Forms.

Chapter - IX: Sections: 9 to 12.

UNIT-IV: Lattices

Lattices - Some properties of Lattices - New Lattices- Modular and Distributive Lattices.
Chapter - X: Sections: 1 to 4.
(Omit example 15 at Page number -10.6,
Omit reMarks at Page number -10.14,
Omit theorem 10 at Page number -10.23,
Omit theorem 17 at Page number -10.23,
Omit example 4 at Page number - 10.23,
Omit example 11 at Page number - 10.24)

UNIT-V: Boolean Algebra

Boolean Algebra– Boolean Polynomials – Karnaugh Maps.
Chapter- X: Sections: 5 to 7.
(Omit theorem 25 and omit K–map for 5 and 6 variables)

Recommended Text

M. K. Venkataraman, N. Sridharan and N. Chandrasekaran, [2003] Discrete Mathematics, the National Publishing Company, Chennai.

Reference Books

1. R. Johnsonbaugh [2001] Discrete Mathematics [5th Edn.] Pearson Education, Asia.,
2. C. L. Liu, [1985] elements of Discrete Mathematics, McGraw Hill, New York,
3. J. Truss. [2000] Discrete Mathematics for Computer Scientists [2nd Edn.], Pearson Education, Asia.
4. M.K. Sen and B.C. Chakraborthy, [2002] Discrete Mathematics [2nd Edition,] Books and allied private Ltd., Kolkata.