SCHOOL OF ARTS AND SCIENCE

DEPARTMENT OF MATHEMATICS

MINUTES OF BOARD OF STUDIES 7th MEETING

Venue

Department of Mathematics

School of Arts and Science (Block)

Sri Manakula Vinayagar Engineering College

Date & Time

20.03.2024 & 10.00 am to 12.30 pm

DEPARTMENT OF MATHEMATICS

Minutes of Board of Studies 7th Meeting

The Board of Studies 7th meeting was held on 20.03.2024 (Wednesday) at 10.15 A.M in the Department of Mathematics, School of Arts and Science college, Sri Manakula Vinayagar Engineering College, with Head of the Department in the Chair.
The following members were present for the BoS meeting

Sl.No	Name of the Member with Designation and official Address	Members as per UGC norms
1	Dr. T. Gayathri M.Sc., M.Phil., Ph.D. Professor and Head Department of Mathematics Sri Manakula Vinayagar Engineering College Puducherry– 605107 gayathrithiyagu@smvec.ac.in/ 9486580058	Chairman
2	Dr. S. Tamilselvan M.Sc., M.Phil., Ph.D. Professor & Head Department of Mathematics Annamalai University, Chidambaram- 608 002 stamilselvan@hotmail.com/9443073937	Subject Expert (University Nominee)
3	Dr. P. Balaji M.Sc., M.Phil., Ph.D. Assistant Professor (Stage II) Department of Mathematics SCSVMV university, Kanchipuram-631561 pbr1002017@gmail.com/9486082115	Subject Expert (Academic Council Nominee)
4	Dr. S. Srinivasan M.Sc., M.Phil., Ph.D. Assistant Professor Department of Mathematics Periyar Government Arts and Science College, Cuddalore -607003 smrail@gmail.com/7010939424	Subject Expert (Academic Council Nominee)
5	Dr.R.Vijayaragunathan M.Sc., M.Phil., Ph.D Assistant Professor and Head Department of Statistics Indira Gandhi College of Arts and Science Puducherry rvijayaragunathan@gmail.com / 9443849615	Expert
6	Mr. G. Indragoby Associate Director Sensipe Software Solutions(p)Ltd Chennai indragoby@gmail.com/98432223234	Member (Representative from Industry)
7	Mr.P.Krishnamoorthy M.Sc., M.Phil. Assistant Professor Department of Mathematics Sri ManakulaVinayagar Engineering College Puducherry– 605107 krishnamoorthymaths@smvec.ac.in /9750028056	Internal Member
8	Dr.B.Kanimozhi M.Sc., M.Phil.,Ph.D. Professor	Internal Member

	Department of Mathematics Sri ManakulaVinayagar Engineering College Puducherry– 605107 kanimozhimaths@smvec.ac.in /7708824215	
9	Mr. R. Sivakumar M.Sc., M.Phil. Assistant Professor Department of Mathematics Sri ManakulaVinayagar Engineering College Puducherry– 605107 sivakumarmaths.sas@smvec.ac.in /8667646837	Internal Member
10	Mr. D. Gnanavel M.Sc., M.Phil. Assistant Professor Department of Mathematics Sri ManakulaVinayagar Engineering College Puducherry– 605107 gnanavel.sas@smvec.ac.in/9629123962	Internal Member
11	Mrs.S.P.Lavanya M.Sc., M.Phil. Assistant Professor Department of Mathematics Sri ManakulaVinayagar Engineering College Puducherry– 605107 lavanya@smvec.ac.in /9655887720	Internal Member
12	Mrs. S Geetha M.Sc., M.Phil. Assistant Professor Department of Physics Sri ManakulaVinayagar Engineering College Puducherry– 605107 geethaphysics@smvec.ac.in /9942355656	Internal Member
13	Dr. K. Karthikeyan M.Sc., M.Phil., Ph.D. Associate Professor Department of Chemistry Sri ManakulaVinayagar Engineering College Puducherry– 605107 karthikeyank2005@gmail.com /9344707262	Internal Member
14	Mr.M.ElamaranM.A., M.Phil. Assistant Professor Department of English Sri ManakulaVinayagar Engineering College Puducherry - 605107 elamaraneng@smvec.ac.in/ 9500712597	Internal Member

AGENDA OF THE MEETING

Item No.: BoS/2024/SAS/UG/MATHEMATICS/ 7 .1

Welcome address, Introduction about the Institution, Department and BoS Members.

Item No.: BoS/2024/SAS/UG/ MATHEMATICS / 7.2

To review and confirm the minutes of the 6th BoS meeting held on November 22,2023.

Item No.: BoS/2024/SAS/UG/ MATHEMATICS / 7.3

To discuss the criteria for fixing (MJD) Major Disciplinary Courses, (MID) Minor Disciplinary Courses, (MLD) Multi-Disciplinary Courses, (AEC) Ability Enhancement Courses, (SEC) Skill Enhancement Courses and (VAC) Value Added Courses from semesters I - VIII.

Item No.: BoS/2024/SAS/UG/ MATHEMATICS / 7.4

To discuss and revise the curriculum (I – VIII semester) and syllabi (I and II semester) for B.Sc. Mathematics programme based on National Education Policy (NEP) under Regulations R- 2023

Item No.: BoS/2024/SAS/UG/ MATHEMATICS / 7.5

To discuss the already approved syllabus of semester I and II.

Item No.: BoS/2024/SAS/UG/ MATHEMATICS / 7.6

To add Value Added Course – Understanding India in II semester.

Item No.: BoS/2024/SAS/UG/ MATHEMATICS / 7.7

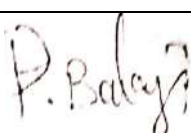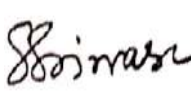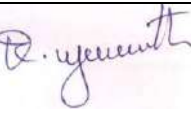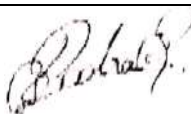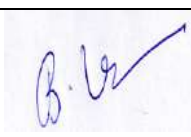Any other item with the permission of the chair.

Item No.: BoS/2024/SAS/ UG / B.Sc. Mathematics 7.1	**Welcome address, Introduction about the Institution, Department and BoS Members.** ❖ The Chairman of the meeting formally welcomed the hon'ble members of the Board and introduced them the credentials of the Institution and of the Department.
Item No.: BoS/2024/SAS/ UG / B.Sc. Mathematics 7.2	**To review and confirm the minutes of the 6th BoS meeting held on November 22,2023.** Suggestions were given by BoS members for the II semester courses in the 6th BoS meeting. **These suggestions were incorporated in the syllabi and approved by the expert members and Recommended to Academic Council.**

S.No	Regulation	Semester	Course Title/ Course Code	Unit	Particulars
1	R2023	II	VECTOR CALCULUS **A23MAT203D**	V	Suggested to shift Stoke's Theorem into Unit IV
1	R2023	II	VECTOR CALCULUS **A23MAT203D**	IV	Suggested to shift Volume of integral into Unit V
2	R2023	II	ORDINARY DIFFERENTIAL EQUATIONS **A23MAT204D**	IV	Suggested to shift Solving Homogeneous linear equations (Cauchy- Euler Equations) into Unit V

[Details are Attached in **Annexure I**]

Item No.: BoS/2024/SAS/ UG / B.Sc. Mathematics 7.3	**To discuss the criteria for fixing (MJD) Major Disciplinary Courses, (MID) Minor Disciplinary Courses, (MLD) Multi-Disciplinary Courses, (AEC) Ability Enhancement Courses, (SEC) Skill Enhancement Courses and (VAC) Value Added Courses from semesters I - VIII.** ❖ The board members appreciated the criteria for fixing the nomenclature (MJD) Major Disciplinary Courses, (MID) Minor Disciplinary Courses, (MLD) Multi-Disciplinary Courses, (AEC) Ability Enhancement Courses, (SEC) Skill Enhancement Courses and (VAC) Value Added Courses with credit distribution from semesters II – VIII based on NEP Regulations 2023 of Pondicherry University.
Item No.: BoS/2024/SAS/ UG / B.Sc. Mathematics 7.4	**To discuss and revise the curriculum (I – VIII semester) and syllabi (I and II semester) for B.Sc. Mathematics programme based on National Education Policy (NEP) under Regulations R- 2023.** ❖ Discussed the curriculum framework for the UG programme B.Sc. Mathematics for semesters (II to VIII) based on NEP Regulations 2023 of Pondicherry University and the same was recommended to Academic Council. ❖ The framed Curriculum (I to VIII) and II semester syllabus are given in Annexure II.
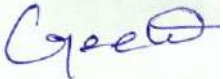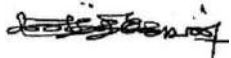
Item No.: BoS/2024/SAS/ UG / B.Sc. Mathematics 7.5	**To discuss the already approved syllabus of semester I and II.**

To discuss the already approved syllabus of semester I and II.

The Syllabus for First and Second Semester Courses for B.Sc.Mathematics under Regulations 2023 presented before the BOS members. The following suggestions were given by BoS members.

These suggestions were incorporated in the syllabi and approved by the expert members and Recommended to Academic Council.

S.No	Regulation	Semester	Course Title/ Course Code	Unit	Particulars
1	R2023	II	MATRICES AND THEORY OF EQUATIONS **A23MAT102D**	IV and V	Suggested to Rename as Theory of equations Continuation
1	R2023	II	MATRICES AND THEORY OF EQUATIONS **A23MAT102D**	IV	Suggested to include Descarte's Rule also in unit IV

[Details are Attached in **Annexure III**]

Item No.: BoS/2024/SAS/ UG / B.Sc. Mathematics 7.6

To add Value Added Course – Understanding India in II semester.

❖ Members appreciated the inclusion of Understanding India in II semester and the syllabus was given in the approved II semester syllabus.

Item No.: BoS/2024/SAS/ UG / B.Sc. Mathematics 7.7

Any other agenda – Nil

The meeting was concluded at 10:00 PM with vote of thanks by **Dr. T. Gayathri**, Chairman, Board of Studies, Department of Mathematics, Sri Manakula Vinayagar Engineering College.

Sl.No	Name of the Member with Designation and official Address	Members as per UGC norms	Signature
1	Dr. T. Gayathri M.Sc., M.Phil., Ph.D. Professor and Head Department of Mathematics Sri Manakula Vinayagar Engineering College Puducherry– 605107 gayathrithiyagu@smvec.ac.in/ 9486580058	Chairman	
2	Dr. S. Tamilselvan M.Sc., M.Phil., Ph.D. Professor & Head Department of Mathematics Annamalai University, Chidambaram- 608 002 stamilselvan@hotmail.com/9443073937	Subject Expert (University Nominee)	
3	Dr. P. Balaji M.Sc., M.Phil., Ph.D. Assistant Professor (Stage II) Department of Mathematics SCSVMV university, Kanchipuram-631561 pbr1002017@gmail.com/9486082115	Subject Expert (Academic Council Nominee)	
4	Dr. S. Srinivasan M.Sc., M.Phil., Ph.D. Assistant Professor Department of Mathematics Periyar Government Arts and Science College, Cuddalore -607003 smrail@gmail.com/7010939424	Subject Expert (Academic Council Nominee)	
5	Dr.R.Vijayaragunathan M.Sc., M.Phil., Ph.D Assistant Professor and Head Department of Statistics Indira Gandhi College of Arts and Science Puducherry rvijayaragunathan@gmail.com / 9443849615	Expert	
6	Mr. G. Indragoby Senior Technical Architect HCL Technologies, Chennai indragoby@gmail.com/98432223234	Member (Representative from Industry)	
7	Mr.P.Krishnamoorthy M.Sc., M.Phil. Assistant Professor Department of Mathematics Sri ManakulaVinayagar Engineering College Puducherry– 605107 krishnamoorthymaths@smvec.ac.in /9750028056	Internal Member	
8	Dr.B.Kanimozhi M.Sc., M.Phil.,Ph.D. Professor Department of Mathematics Sri ManakulaVinayagar Engineering College Puducherry– 605107 kanimozhimaths@smvec.ac.in	Internal Member	

	/7708824215		
9	Mr. R. Sivakumar M.Sc., M.Phil. Assistant Professor Department of Mathematics Sri ManakulaVinayagar Engineering College Puducherry– 605107 sivakumarmaths.sas@smvec.ac.in /8667646837	Internal Member	
10	Mr. D. Gnanavel M.Sc., M.Phil. Assistant Professor Department of Mathematics Sri ManakulaVinayagar Engineering College Puducherry– 605107 gnanavel.sas@smvec.ac.in/9629123962	Internal Member	
11	Mrs.S.P.Lavanya M.Sc., M.Phil. Assistant Professor Department of Mathematics Sri ManakulaVinayagar Engineering College Puducherry– 605107 lavanya@smvec.ac.in /9655887720	Internal Member	
12	Mrs. S Geetha M.Sc., M.Phil. Assistant Professor Department of Physics Sri ManakulaVinayagar Engineering College Puducherry– 605107 geethaphysics@smvec.ac.in /9942355656	Internal Member	
13	Dr. K. Karthikeyan M.Sc., M.Phil., Ph.D. Associate Professor Department of Chemistry Sri ManakulaVinayagar Engineering College Puducherry– 605107 karthikeyank2005@gmail.com /9344707262	Internal Member	
14	Mr.M.ElamaranM.A., M.Phil. Assistant Professor Department of English Sri ManakulaVinayagar Engineering College Puducherry - 605107 elamaraneng@smvec.ac.in/ 9500712597	Internal Member	

Department	MATHEMATICS		Programme: B.Sc. (Mathematics)				
Semester	**Second**		Course Category Code: **DSC**		*End Semester Exam Type: **TE**		
Course Code	**A23MAT203D**		Periods / Week		Credit	Maximum Marks	
			L	T	P	C	CAM	ESE	TM
Course Name	**VECTOR CALCULUS**		3	1	0	4	25	75	100

Prerequisite	Mathematics should be a subject in +2.
Course Objectives	To enable students to Understand the fundamental concepts of vector calculus
	To enable the students to learn the concepts of differentiation of vectors.
	To find solutions of Solenoidal and Irrotational.
	To know about the line integral.
	To bring the knowledge of vector calculus and its application in theorems

Course Outcome	On completion of the course, the students will be able to		BT Mapping (Highest Level)
	CO1	Understand the concept of Direction cosines and direction ratios	**K2**
	CO2	Gain logical skills in the formulation of differential equations	**K3**
	CO3	Compute divergence and curl of vectors.	**K3**
	CO4	Apply the various techniques of vector integration in solving Line and surface integrals.	**K3**
	CO5	Understand the concept of Gauss Divergence Theorem and Green's Theorem	**K3**

UNIT-I	INTRODUCTION	Periods: 12	
Introduction – Scalars and vectors – Representation of a vector and types of vectors – Algebra of vectors – Position vectors – Resolution of vectors – Direction cosines and direction ratios – Limit of a vector function – Continuity and derivative of vector function.			CO1

UNIT-II	DIFFENENTIAL VECTOR CALCULUS	Periods: 12	
Differentiation of a vector – Geometrical Interpretation of the Derivative – Differentiation formulae – Differentiation of dot and cross Products – Partial Derivatives of Vectors – Differentials of Vectors.			CO2

UNIT-III	GRADIENT, DIVERGENCE AND CURL	Periods: 12	
Vector Differential Operator Del - Gradient of a Scalar Function - Directional Derivative - Geometric Interpretation - Gradient of the sum of Functions; of the product of functions and of a function of function - Operations involving Del - Divergence of a Vector and its Physical Interpretation - Curl of a Vector and its Physical Interpretation - Expansion Formulae for Operators involving Del - Solenoidal and Irrotational.			CO3

UNIT-IV	VECTOR INTEGRATION	Periods: 12	
The Line Integral - Surface Integral and its Physical Meaning – Stoke's Theorem			CO4

UNIT-V	VECTOR INTEGRATION(CONTD.)	Periods: 12	
Green's Theorem, Gauss Divergence Theorem and Volume of integral - Simple problem			CO5

Lecture Periods: 45	Tutorial Periods: 15	Practical Periods: -	Total Periods: 60

Text Books

1. M.D. Raisinghania and others. S. Chand & Co,Ltd., Ram Nagar New Delhi 110055, Vector Algebra, 1999.
2. Duraipandian, P., LaxmiDuraipandian, Vector Calculus, Emerald Publishers, 2003.
3. Shanti Narayan, P. K. Mittal, A Text Book of Vector Analysis (English) 19th Edition, S.Chand Publishers, 2013.

Reference Books

1. P.R.Vittal. (2004) Vector Calculus, Fourier series and Fourier Transform. Margham Publications, Chennai.
2. G.B.Thomas and R.L.Finney. (1998) Calculus and Analytic Geometry, Addison Wesley (9th Edn), Mass. (Indian Print).
3. M.K.Venkataraman. (1992) Engineering Mathematics-Part B. National Publishing Company, Chennai.
4. B.S.Grewal. Higher Engineering Mathematics (2002), Khanna Publishers, New Delhi.

Web References

1. https://www.lehman.edu/faculty/anchordoqui/VC-3.pdf
2. https://www.rcet.org.in/uploads/files/LectureNotes/cse/S2/Mathematics%20-%20II%20Notes/Unit-2%20Vector%20Calculus.pdf
3. https://www.snggdcg.ac.in/pdf/study-material/mathematics/SMch18.pdf

* TE – Theory Exam, LE – Lab Exam

COs/POs/PSOs Mapping

Cos	Program Outcomes (POs)					Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
1	2	2	3	2	3	2	3	1
2	3	2	3	3	1	3	3	1
3	3	2	2	3	3	2	3	1
4	2	3	2	3	3	2	2	2
5	3	2	3	3	1	3	2	1

Correlation Level: 1 - Low, 2 - Medium, 3 – High

Evaluation Method

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	10		5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Department	**MATHEMATICS**	Programme: **B.Sc. (Mathematics)**					
Semester	**Second**	Course Category Code: **DSC** *End Semester Exam Type: **TE**					
Course Code	**A23MAT204D**	Periods / Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	**ORDINARY DIFFERENTIAL EQUATIONS**	**3**	**1**	**0**	**4**	**25**	**75**	**100**

Prerequisite	Mathematics should be a subject in +2.
Course Objectives	To identify an ordinary differential equation and its order.
	To evaluate first order differential equations.
	To find solutions of exact equations.
	To know about the particular integral.
	To solve differential equations using variation of parameter.

Course Outcome	**On completion of the course, the students will be able to**		BT Mapping (Highest Level)
	CO1	Understand the order, degree of differential equation.	**K2**
	CO2	Determine solutions to first order linear differential equations.	**K2**
	CO3	Familiarize the orthogonal trajectory of the system of curves on a given surface.	**K3**
	CO4	Solving linear differential equation with constant coefficient.	**K3**
	CO5	Find the complete solution of a differential equation with constant coefficients by variation of Parameter.	**K3**

UNIT-I	**FIRST ORDER DIFFERENTIAL EQUATIONS**	**Periods: 12**	
Differential Equation, Order and Degree of a Differential equation – Formation of a differential equation – Wronskian – definition – linearly dependent and independent set of functions.			**CO1**
UNIT-II	**EXACT DIFFERENTIAL EQUATIONS**	**Periods: 12**	
Equation of first order and first degree – separation of variables – Necessary and sufficient conditions for a differential equation of first order and first degree to be exact – integrating factor – linear Differential equation – Equation reducible to linear form (Bernoulli's equation).			**CO2**
UNIT-III	**DIFFERENTIAL EQUATIONS**	**Periods: 12**	
Trajectories – orthogonal trajectories (cartesian and polar co-ordinates) – Equation solvable for p – Equation solvable for x and y – Equation in Clairaut's form - General and singular solution.			**CO3**
UNIT-IV	**DIFFERENTIAL EQUATIONS (HIGHER ORDER)**	**Periods: 12**	
Linear differential equations with constant coefficients – finding complementary function and Particular Integrals of the form $e^{mx}, \sin mx, x^m, e^{ax} X$ where X is a function of x.			**CO4**
UNIT-V	**DIFFERENTIAL EQUATIONS WITH VARIABLE COEFFICIENTS**	**Periods: 12**	
Solving Homogeneous linear equations (Cauchy- Euler Equations) - Equation reducible to Homogeneous linear form (Legendre's linear equations) –Method of variation of parameters – Solving ordinary simultaneous differential equation with constant coefficients.			**CO5**

Lecture Periods: 45	**Tutorial Periods: 15**	**Practical Periods: -**	**Total Periods: 60**

Text Books

1. M. D. Raisinghania, "Ordinary and Partial Differential Equations", S. Chand & Company Ltd, 2020.
2. E. A. Coddington, " An Introduction to Ordinary Differential Equations", Prentice Hall of India,1991.
3. S. C. Deo, Y. Lakshmi Nathan and V. Raghavendra, "Text Book of Ordinary Differential Equation", Tata McGraw Hill, New Delhi, 2nd Edition, 2002.

Reference Books

1. S.Narayanan, T.K. Manickavachagom Pillal,"Differential Equations and its Applications" ,Viswanathan Printers & Publishers Pvt. Ltd., 2015.
2. Dr. Arumugam and Mr. A. Thangapandi Issac, "Differential Equations and its Applications", New Gamma Publishing House,2014.
3. E. A. Coddington and H. Davinson, "Theory of Ordinary Differential Equations", McGraw Hill, 1955.

Web References

1. https://mathworld.wolfram.com/OrdinaryDifferentialEquation.html
2. https://nptel.ac.in/courses/111/106/111106100/
3. https://www.youtube.com/watch?v=FU-7xJLpoWg.

* TE – Theory Exam, LE – Lab Exam

COs/POs/PSOs Mapping

Cos	Program Outcomes (POs)					Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
1	3	2	3	2	3	2	3	1
2	3	2	3	2	1	3	2	1
3	3	2	3	3	3	2	3	1
4	2	3	2	3	3	3	2	2
5	3	2	3	3	1	3	2	1

Correlation Level: 1 - Low, 2 - Medium, 3 – High

Evaluation Method

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	10		5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

CURRICULUM (I – VIII semester) AND II SEMESTER SYLLABUS

SEMESTER – I										
Sl. No.	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	A23TAT101C / A23FRT101C	Tamil-I / French - I	MIL	3	0	0	3	25	75	100
2	A23GET101C	General English I	ENG	3	0	0	3	25	75	100
3	A23MAT101D	Calculus	DSC	3	1	0	4	25	75	100
4	A23MAT102D	Trigonometry	DSC	3	1	0	4	25	75	100
5	A23PHD101D	Allied physics	IDC	3	1	0	4	25	75	100
Practical										
6	A23PHL109D	Allied Physics practical	IDC	0	0	4	2	50	50	100
Skill Enhancement Courses										
7	A23ENSA02C	Soft Skills	SEC	0	0	4	2	100	0	100
Ability Enhancement Course										
8	A23AETA01C	Public Administration	AEC	2	0	0	1	100	0	100
Employability Enhancement Course										
9	A23MAC101D	Certificate Course-I	EEC	0	0	4	-	100	0	100
							23	475	425	900

SEMESTER – II										
Sl. No.	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
1	A23MAT203D	MATRICES AND THEORY OF EQUATIONS	MJD	3	1	0	4	25	75	100
2	A23MAT204D	VECTOR CALCULUS	MJD	3	1	0	4	25	75	100
3	A23MAD202D	STATISTICS - II	MID	3	1	0	4	25	75	100
4	A23ENSA03C	COMMUNICATION SKILLS	MLD	3	0	0	3	25	75	100
5	A23TAT202C / A23FRT202C	TAMIL II / FRENCH II	AEC	3	0	0	2	25	75	100
6	A23GET202C	ENGLISH II	AEC	3	0	0	2	25	75	100
7	A23MAS201D	LOGICAL REASONING	SEC	0	0	6	3	50	50	100
8	A23VAC201C	UNDERSTANDING INDIA	VAC	2	0	0	2	100	0	100
9	A23VAC202C	ENVIRONMENTAL STUDIES	VAC	2	0	0	2	100	0	100
Employability Enhancement Course										
10	A23MAC202D	Certificate Course-II	EEC	0	0	4	-	100	0	100
							26	500	500	1000

SEMESTER – III										
Sl. No.	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
1	A23MAT305D	REAL ANALYSIS I	MJD	3	1	0	4	25	75	100
2	A23MAT306D	ELEMENTS OF DISCRETE MATHEMATICS	MJD	3	1	0	4	25	75	100
3	A23MAD303D	STATISTICS - III	MID	3	1	0	4	25	75	100
4	A23XXXXXX	PERSONAL FINANCE	MLD	3	0	0	3	25	75	100
5	A23GET303C	ENGLISH	AEC	3	0	0	2	25	75	100
6	A23MAS302D	LATEX	SEC	0	0	6	3	50	50	100
7	A23VAC303C	HEALTH AND WELLNESS, YOGA EDUCATION, SPORTS AND FITNESS	VAC	2	0	0	2	100	0	100
Employability Enhancement Course										
10	A23MAC303D	Certificate Course-III	EEC	0	0	4	-	100	0	100
							22	375	425	800

SEMESTER – IV										
Sl. No.	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
1	A23MAT407D	Real Analysis II	MJD	3	1	0	4	25	75	100
2	A23MAT408D	Group Theory	MJD	3	1	0	4	25	75	100
3	A23MAT409D	Elements of Differential Equations	MJD	3	1	0	4	25	75	100
4	A23MAD404D	Statistics - IV	MID	3	1	0	4	25	75	100
5	A23VAC404C	Digital and Technological Solutions	VAC	2	0	0	2	100	0	100
6	A23MAN401D	Community Engagement	SKD	2	0	6	2	50	50	100
Employability Enhancement Course										
11	A23MAC404D	Certificate Course-IV	EEC	0	0	4	-	100	0	100
							20	350	350	700

SEMESTER – V										
Sl. No.	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
1	A23MAT510D	MATHEMATICAL MODELING	MJD	3	1	0	4	25	75	100
2	A23MAT511D	RING THEORY	MJD	3	1	0	4	25	75	100
3	A23MAT512D	COMPLEX ANALYSIS I	MJD	3	1	0	4	25	75	100
4	A23MAT513D	FOURIER SERIES AND FOURIER TRANSFORM	MJD	3	1	0	4	25	75	100
5	A23MAD505D	OPERATIONS RESEARCH I	MID	3	1	0	4	25	75	100
6	A23XXXXXX	SUMMER INTERNSHIP	SKD	0	0	6	4	50	50	100
							24	175	425	600

SEMESTER – VI										
Sl. No.	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
1	A23MAT614D	PROGRAMMING USING SCILAB -THEORY & PRACTICAL	MJD	3	1	0	4	25	75	100
2	A23MAT615D	COMPLEX ANALYSIS II	MJD	3	1	0	4	25	75	100
3	A23MAT616D	INTRODUCTION TO LINEAR ALGEBRA	MJD	3	1	0	4	25	75	100
4	A23MAT617D	GRAPH THEORY I	MJD	3	1	0	4	25	75	100
	A23MAD606D	OPERATIONS RESEARCH II	MID	3	1	0	4	25	75	100
							20	125	375	500

SEMESTER – VII										
Sl. No.	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
1	A23MAT718D	NUMERICAL METHODS USING SCILAB – THEORY & PRACTICAL	MJD	3	1	0	4	25	75	100
2	A23MAT719D	MECHANICS I (STATICS)	MJD	3	1	0	4	25	75	100
3	A23MAT720D	GRAPH THEORY II	MJD	3	1	0	4	25	75	100
4	A23MAD707D	FUZZY ALGEBRA	MID	3	1	0	4	25	75	100
	A23MAD708D	BESSEL'S FUNCTIONS	MID	3	1	0	4	25	75	100
							20	125	375	500

SEMESTER – VIII										
Sl. No.	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
1	A23MAT821D	TOPOLOGY	MJD	3	1	0	4	25	75	100
2	A23MAT822D	MECHANICS II (DYNAMICS)	MJD	3	1	0	4	25	75	100
3	A23XXE6XXX	RESEARCH PROJECT OR 3 MAJOR DISCIPLINARYCOURSES	MID	3	1	0	12	50	50	100
4	A23MAT823D	DIFFERENTIAL GEOMETRY	MJD	3	1	0		25	75	100
	A23MAT824D	FUNCTIONAL ANALYSIS	MJD	3	1	0		25	75	100
	A23MAT825D	NUMBER THEORY	MJD	3	1	0		25	75	100
							20	100/125	200/375	300/500

Department	**MATHEMATICS**		Programme: **B.Sc (Mathematics)**			
Semester	**Second**		Course Category Code: **MJD**		*End Semester Exam Type: **TE**	
Course Code	**A23MAT203D**		Periods / Week	Credit	Maximum Marks	
			L T P	C	CAM ESE TM	
Course Name	**MATRICES AND THEORY OF EQUATIONS**		3 1 0	4	25 75 100	

Prerequisite	**Mathematics** should be a subject in +2.
Course Objectives	To introduce the idea of matrices and to learn about the algebra of matrices
	To solve system linear equations using matrix Theory
	To develop the concept of the Sum of the powers of the roots.
	To introduce variety roots.
	To study the concept of biquadratic equations

Course Outcome	**On completion of the course, the students will be able to**		BT Mapping (Highest Level)
	CO1	Apply the concept of Matrix transformations.	**K3**
	CO2	Demonstrate an understanding of applications of Matrices	**K3**
	CO3	To learn the relation between the co-efficient and roots of polynomial equations.	**K2**
	CO4	Solve problems related to Multiple and Nature of position of roots	**K3**
	CO5	Analytic Methods for solving the polynomial equation of degrees 3 & 4.	**K2**

UNIT-I	**LINEAR SYSTEMS**	**Periods: 12**	
Linear systems - Matrices - Matrix operations - Properties of Matrix operation, Matrix transformations.			CO1
UNIT-II	**SOLUTIONS OF LINEAR SYSTEMS OF EQUATIONS**	**Periods: 12**	
Solutions of Linear systems of equations - Row echelon from reduced row echelon form – Polynomial interpolation - The inverse of a Matrix. - Linear Systems and inverses - LU- Factorization Method			CO2
UNIT-III	**THEORY OF EQUATIONS**	**Periods: 12**	
Division algorithm - Relation between roots and coefficients - Sum of the powers of the roots.			CO3
UNIT-IV	**THEORY OF EQUATIONS[Contd]**	**Periods: 12**	
Reciprocal equations - Transformation of equations: - Multiple roots - Nature of position of roots - Sturm's Theorem – Descarte's Rule.			CO4
UNIT-V	**THEORY OF EQUATIONS[Contd]**	**Periods: 12**	
Cardan's Method for solving Cubic equations – Ferrari's Method for solving biquadratic equations - New Newton's Method- Horner's Method			CO5

Lecture Periods: 45	**Tutorial Periods: 15**	**Practical Periods: -**	**Total Periods: 60**

Text Books

1. Bernard Kolman Drid R. Hill, Introductory Linear Algebra, (8e),Pea rson India (2011).
2. Theory of Equations, Hari Kishan, Atlantic Publishers, 2022.
3. Theory of Equations, Lalji Prasad, New Revised Edition, 2016.

Reference Books

1. S. Arumugam and A Thangaand Isaac, Set Theory Number System and Theory of Equations, New Gamma publishing house (1997.)
2. A Text Book of Theory Of Equations January 2020 by Manoranjan Kr. Singh**.**
3. Algebra Volume-1, T.K. Manicavachagom Pillay , T.Natarajan and K.S. Ganapathy,. Viswanathan (Printers & Publishers) Pvt. Lid, (1999).

Web References

1. https://builtin.com/data-science/dot-product-matrix
2. https://math.emory.edu/~lchen41/teaching/2020_Fall/Section_2-7.pdf
3. https://www.dictionary.com/browse/division-algorithm
4. https://web.math.ucsb.edu/~padraic/mathcamp_2013/root_find_alg/Mathcamp_2013_Root-Finding_Algorithms_Day_2.pdf
5. https://cs.fit.edu/~wds/classes/adm/Lectures/HornerPolynomial.pdf

COs/POs/PSOs Mapping

Cos	Program Outcomes (POs)					Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
1	2	3	3	3	2	3	2	1
2	3	2	3	2	1	3	2	1
3	3	2	3	3	2	2	3	1
4	2	3	3	3	3	3	2	2
5	3	2	3	3	2	3	2	1

Correlation Level: 1 - Low, 2 - Medium, 3 – High

Evaluation Method

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	10		5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Department	**MATHEMATICS**		Programme: **B.Sc. (Mathematics)**		
Semester	**Second**		Course Category Code: **MJD**		*End Semester Exam Type: **TE**
Course Code	**A23MAT204D**		Periods / Week	Credit	Maximum Marks

Course Code	**A23MAT204D**	L	T	P	C	CAM	ESE	TM
Course Name	**VECTOR CALCULUS**	**3**	**1**	**0**	**4**	**25**	**75**	**100**

Prerequisite	Mathematics should be a subject in +2.	
Course Objectives	To enable students to Understand the fundamental concepts of vector calculus	
	To enable the students to learn the concepts of differentiation of vectors.	
	To find solutions of Solenoidal and Irrotational.	
	To know about the line integral.	
	To bring the knowledge of vector calculus and its application in theorems	

Course Outcome	**On completion of the course, the students will be able to**		BT Mapping (Highest Level)
	CO1	Understand the concept of Direction cosines and direction ratios	**K2**
	CO2	Gain logical skills in the formulation of differential equations	**K3**
	CO3	Compute divergence and curl of vectors.	**K3**
	CO4	Apply the various techniques of vector integration in solving Line and surface integrals.	**K3**
	CO5	Understand the concept of Gauss Divergence Theorem and Green's Theorem.	**K3**

UNIT-I	**INTRODUCTION**	**Periods: 12**

Introduction – Scalars and vectors – Representation of a vector and types of vectors – Algebra of vectors – Position vectors – Resolution of vectors – Direction cosines and direction ratios – Limit of a vector function – Continuity and derivative of vector function.	**CO1**

UNIT-II	**DIFFENENTIAL VECTOR CALCULUS**	**Periods: 12**

Differentiation of a vector – Geometrical Interpretation of the Derivative – Differentiation formulae – Differentiation of dot and cross Products – Partial Derivatives of Vectors – Differentials of Vectors.	**CO2**

UNIT-III	**GRADIENT, DIVERGENCE AND CURL**	**Periods: 12**

Vector Differential Operator Del - Gradient of a Scalar Function - Directional Derivative - Geometric Interpretation - Gradient of the sum of Functions; of the product of functions and of a function of function - Operations involving Del - Divergence of a Vector and its Physical Interpretation - Curl of a Vector and its Physical Interpretation - Expansion Formulae for Operators involving Del - Solenoidal and Irrotational.	**CO3**

UNIT-IV	**VECTOR INTEGRATION**	**Periods: 12**

The Line Integral - Surface Integral and its Physical Meaning – Stoke's Theorem	**CO4**

UNIT-V	**VECTOR INTEGRATION(CONTD.)**	**Periods: 12**

Green's Theorem, Gauss Divergence Theorem and Volume of integral - Simple problem	**CO5**

Lecture Periods: 45	**Tutorial Periods: 15**	**Practical Periods: -**	**Total Periods: 60**

Text Books

1.M.D. Raisinghania and others. S. Chand & Co,Ltd., Ram Nagar New Delhi 110055, Vector Algebra, 1999.
2.Duraipandian, P., LaxmiDuraipandian, Vector Calculus, Emerald Publishers, 2003.
3.Shanti Narayan, P. K. Mittal, A Text Book of Vector Analysis (English) 19th Edition, S.Chand Publishers, 2013.

Reference Books

1.P.R.Vittal. (2004) Vector Calculus, Fourier series and Fourier Transform. Margham Publications, Chennai.
2.G.B.Thomas and R.L.Finney. (1998) Calculus and Analytic Geometry, Addison Wesley (9th Edn), Mass. (Indian Print).
3.M.K.Venkataraman. (1992) Engineering Mathematics-Part B. National Publishing Company, Chennai.
4.B.S.Grewal. Higher Engineering Mathematics (2002), Khanna Publishers, New Delhi

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1.https://www.lehman.edu/faculty/anchordoqui/VC-3.pdf
2.https://www.rcet.org.in/uploads/files/LectureNotes/cse/S2/Mathematics%20-%20II%20Notes/Unit-2%20Vector%20Calculus.pdf
3.https://www.snggdcg.ac.in/pdf/study-material/mathematics/SMch18.pdf

* TE – Theory Exam, LE – Lab Exam

BoS 7th Meeting (20.03.2024)

COs/POs/PSOs Mapping

Cos	Program Outcomes (POs)					Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
1	2	2	3	2	3	2	3	1
2	3	2	3	3	1	3	3	1
3	3	2	2	3	3	2	3	1
4	2	3	2	3	3	2	2	2
5	3	2	3	3	1	3	2	1

Correlation Level: 1 - Low, 2 - Medium, 3 – High

Evaluation Method

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	10	5	5	5		75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Department	**MATHEMATICS**		Programme: **B.Sc (Mathematics)**				
Semester	**Second**		Course Category Code: **MID**		*End Semester Exam Type: **TE**		
Course Code	**A23MAD202D**		Periods / Week		Credit	Maximum Marks	
			L	T	P	C	CAM	ESE	TM
Course Name	**STATISTICS II**		3	1	0	4	25	75	100

Prerequisite	Basic Statistics Knowledge	
Course Objectives	To introduce the normal distribution and its properties.	
	To develop an understanding of the special continuous probability distributions.	
	To introduce the concept of correlation and its measurement.	
	To develop an understanding of the linear and curvilinear regression models.	
	To introduce the concepts of theory of attributes and its applications.	
Course Outcome	On completion of the course, the students will be able to	BT Mapping (Highest Level)
	CO1 Solve the concept of Generating function.	K3
	CO2 Analyze and apply the knowledge of normal and gamma distribution.	K3
	CO3 Demonstrate the Application of correlation analysis.	K2
	CO4 Understand the difference between Linear and Curvilinear Regression	K3
	CO5 Know the applications of Classes and Class frequencies.	K2

UNIT-I	NORMAL DISTRIBUTION	Periods: 12	
Normal Distribution: Limiting form of binomial distribution – Characteristics – Mode – Median – Moment Generating function – Cumulant Generating Function – Moments of Normal distribution			CO1

UNIT-II	SPECIAL CONTINUOUS PROBABILITY DISTRIBUTIONS	Periods: 12	
Special Continuous Probability Distributions: Rectangular Distribution - Triangular distribution – Gamma Distribution – simple problems			CO2

UNIT-III	CORRELATION	Periods: 12	
Correlation: Karl pearson's coefficient of correlation – Calculation of the correlation coefficient for a bivariate frequency distribution – Rank correlation – Simple problems			CO3

UNIT-IV	LINEAR AND CURVILINEAR REGRESSION	Periods: 12	
Linear and Curvilinear Regression: Linear regression – Curvilinear regression - Regression curves – simple problems			CO4

UNIT-V	THEORY OF ATTRIBUTES	Periods: 12	
Theory of Attributes: Notations – Dichotomy – Classes and Class frequencies – Consistency of data – Independence of attributes – Association of attributes - Simple problems.			CO5

Lecture Periods: 45	Tutorial Periods: 15	Practical Periods: -	Total Periods: 60

Text Books

1. S.C. Gupta & V.K. Kapoor, Fundamentals of Mathematical Statistics- Sultan Chand and Sons,12th Edition ,2022
2. S.P. Gupta, Statistical methods- Sultan Chand and Sons, 45th Edition 2017
3. R.S.N.Pillai & V. Bagavathi, Statistics –S.Chand & company LTD, Reprint 2014

Reference Books

1. Aliaga, Gunderson, "Interactive Statistics", 2nd Edition – Pearson/Prentice Hall
2. Hamilton, "Statistics with STATA", 8th Edition, Duxbury 2004.
3. P.R.Vittal, "Mathematical Statistics ‖", Margham Publications -2002- Reprint 2012.

4. Weisberg, S, "Applied Linear Regression", John Wiley and Sons, New York - 1980.
5.Kokoska, "Introductory Statistics: A Problem-Solving Approach", Review copy, Freeman2011.

Web References

1. http://onlinestatbook.com/Online_Statistics_Education.pdf
2. http://www.stats.ox.ac.uk/student-resources/bammath/course-materials/
3. https://nptel.ac.in/courses/111/105/111105041/

* TE – Theory Exam, LE – Lab Exam

COs/POs/PSOs Mapping

Cos	Program Outcomes (POs)					Program Specific Outcomes (PSOs)		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**
1	2	3	3	3	2	3	2	1
2	3	2	3	2	1	3	2	1
3	3	2	3	3	2	2	3	1
4	2	3	3	3	3	3	2	2
5	3	2	3	3	2	3	2	1

Correlation Level: 1 - Low, 2 - Medium, 3 – High

Evaluation Method

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	**CAT 2**	**Model Exam**	**Assignment***	**Attendance**		
Marks	10		5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Department	**ENGLISH**			Programme: **B.Sc. (Mathematics)**			
Semester	**Second**			Course Category Code: **MLD**		End Semester Exam Type: **TE**	
Course Code	**A23ENSA03C**	Periods / Week			Credit	Maximum Marks	
		L	T	P	C	CAM	ESE	TM
Course Name	**COMMUNICATION SKILLS**	**3**	**0**	**0**	**3**	**25**	**75**	**100**

Prerequisite	Knowledge gained from communication and part-two language and new paper reading	
Course Objectives	To improve the skill of rapid reading and communicate efficiently	
	To decode and impart speaking skills with confidence	
	To train students in analyzing articles and Newspaper	
	To enhance the sense of social responsibility and accountability of the students	
	To expound the significance in Managerial skills	

	On completion of the course, the students will be able to	BT Mapping (Highest Level)
Course Outcomes	**CO1** Understand the pattern to communicate effectively	**K3**
	CO2 Impart Speaking skills with self-confidence	**K3**
	CO3 Enhance their strategies in analyzing articles and Newspaper	**K3**
	CO4 The sense of social responsibility and accountability of the students	**K3**
	CO5 Expertise in Managerial skills	**K3**

UNIT-I	**COMMUNICATION SKILLS - SPEAKING**	**Periods: 06**	
1. Aspects of speaking 2. Process of effective Speech 3. Techniques for effectual Presentation			**CO1**

UNIT-II	**SELF-MANAGEMENT SKILLS**	**Periods: 06**	
1. Time Management 2. Stress Management 3. Emotional Management			**CO2**

UNIT-III	**COMMUNICATION SKILLS - READING**	**Periods: 06**	
1. Article analysis 2. Comprehension 3. Skimming and Scanning			**CO3**

UNIT-IV	**SOCIAL SKILLS**	**Periods: 06**	
1. Leadership 2. Teamwork 3. Decision making			**CO4**

UNIT-V	**PUBLIC SPEAKING AND PRESENTATION**	**Periods: 06**	
1. Rules and Techniques for Public Speaking 2. Practice session (both, Public Speaking and Presentation)			**CO5**

Lecture Periods: -	Tutorial Periods: -	Practical Periods: 30	Total Periods: 30

Text Books

1. Barun K. Mitra, Personality Development and Soft skills, Oxford University Press, 2nd Edition, 2016.
2. Syamala, V, *Effective English Communication for you*, Chennai: Emerald Publisher, 1st Edition, 2002.
3. Sanjay Kumar &PusphLata. *Communication Skills*, Oxford University Press, 2nd Edition, 2015.

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1. Murphy, John J, Pulling Together: 10 Rules for High-Performance Teamwork, Simple Truth Publication, 1st Edition, 2010.

2. Balasubramanian, T, *A Textbook of English Phonetics for Indian Students*, Trinity Press, 1st Ed, 1981.
3. Sardana,C.K, *The Challenge of Public Relations*, New Delhi: Harnand Publication,1st Edition, 1995.
4. Sabina Pillai, Agna Fernandez, *Soft Skills and Employability Skills*, Cambridge University Press, 2017.
5. Jeff Butterfield, *Soft Skills for Everyone*, Cengage India Private Limited, 2nd Edition, 2020.

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1. https://blog.dce.harvard.edu/professional-development/10-tips-improving-your-public-speaking-skills
2. https://corporatefinanceinstitute.com/resources/careers/soft-skills/management-skills/
3. https://zety.com/blog/how-to-introduce-yourself
4. https://www.butte.edu/departments/cas/tipsheets/readingstrategies/skimming_scanning.html
5. https://www.mayoclinic.org/tests-procedures/stress-management/about/pac-20384898

* TE – Theory Exam, LE – Lab Exam

COs/POs/PSOs Mapping

Cos	Program Outcomes (POs)					Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
1	3	3	3	2	3	1	3	3
2	3	3	3	2	3	1	3	2
3	3	3	3	2	2	1	3	2
4	3	3	3	3	3	1	3	2
5	3	3	2	2	2	1	2	2

Correlation Level: 1 - Low, 2 - Medium, 3 – High

Evaluation Method

Assessment	Internal Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	80		0	10	10	0	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Department	**TAMIL**	Programme: **B.A.(TAMIL)**		
Semester	**SECOND**	Course Category Code: **AEC** *End Semester Exam Type: **TE**		

Course Code	**A23TAT202C**	Periods/Week			Credit	MaximumMarks		
		L	T	P	C	CAM	ESE	TM
Course Name	**TAMIL – II**	**3**	**0**	**0**	**2**	**25**	**75**	**100**

(Common to **B.A, B.Sc., BBA., B.COM., BCA., B.COM CS.,**)

Prerequisite	பன்னிரெண்டாம் வகுப்பில் தமிழை ஒரு பாடமாகப் பயின்றிருக்க வேண்டும்.

Course Objectives	• செவ்விலக்கிய தன்மை கொண்ட தமிழ்மொழியின் சிறப்பினை எடுத்துரைப்பதாக இப்பாடத்திட்டம் அமைக்கப்பட்டுள்ளது.
	• இரண்டாயிரம் ஆண்டுகாலத் தமிழின் தொன்மையையும் வரலாற்றையும் அதன் விழுமியங்களையும் பண்பாட்டையும் எடுத்துரைப்பதாக இப்பாடத்திட்டம் அமைக்கப்பட்டுள்ளது.
	• தமிழ் இலக்கியம் உள்ளடக்கத்திலும், வடிவத்திலும் பெற்றமாற்றங்கள், அதன் சிந்தனைகள், அடையாளங்கள் ஆகியவற்றைக் காலந்தோறும் எழுதப்பட்ட இக்கியங்களின் வழியாகக் கூறுவதற்கு இப்பாடத்திட்டம் அமைக்கப்பட்டுள்ளது.
	• வாழ்வியல் சிந்தனைகள், ஒழுக்கவியல் கோட்பாடுகள், சமத்துவம், சூழலியல் எனப் பல கூறுகளை மாணவர்களுக்கு எடுத்துரைக்கும் விதத்தில் இப்பாடத்திட்டம் உருவாக்கப்பட்டுள்ளது.
	• சிந்தனை ஆற்றலைப் பெருக்குவதற்குத் தாய்மொழியின் பங்களிப்பினை உணர்த்த இப்பாடத்திட்டம் அமைக்கப்பட்டுள்ளது.

Course Outcome	**On completion of the course, the students will be able to**		BT Mapping (Highest Level)
	CO1	இலக்கியங்கள் உணர்த்தும் வாழ்வியல் நெறிமுறைகளைப் பேணிநடத்தல்.	**K3**
	CO2	நமது எண்ணத்தை வெளிப்படுத்தும் கருவியாகத் தாய்மொழியைப் பயன்படுத்துதல்.	**K3**
	CO3	தகவல் தெடர்புக்குத் தாய்மொழியின் முக்கியத்துவத்தை உணர்தல்.	**K2**
	CO4	தாய்மொழியின் சிறப்பை அறிதல்.	**K3**
	CO5	இலக்கிய இன்பங்களை நுகரும் திறன்களை வளர்த்தல்.	**K3**

UNIT-I	காப்பியம்	**Periods: 09**

சிலப்பதிகாரம்	- வழக்குரைகாதை—காவியுகுநீரும்…முதல் தோற்றான் உயிர்வரை (8 வரிகள்)	CO1
மணிமேகலை	- பளிக்கறை புக்ககாதை—மதுமலர்க் கூந்தல்…முதல் புறமறிப் பாராய் வரை (106-121வரிகள்)	
பெரியபுராணம்	- இளையான்குடிமாறநாயனார்புராணம் - உள்ளம் அன்புகொண்டு…(17ஆவது பாடல்மட்டும்)	
கம்பராமாயணம்	- கும்பகர்ணவதைப்படலம் - உறங்குகின்ற கும்பகன்ன… (45ஆவதுபாடல் மட்டும்)	
தேம்பாவணி	- பாலமாட்சிப்படலம் - ஊட்டினார்அருள்…(229 பாடல் மட்டும்)	
சீறாப்புராணம்	- மழையழைப்பித்தப் படலம் - வேயினை முறித்து எனத் தொடங்கும் (15ஆவது பாடல் மட்டும்)	

UNIT-II	பதினெண் கீழ்க்கணக்கு நூல்கள்	**Periods: 09**

திருக்குறள்	- வலியறிதல் (48),நெஞ்சொடுகிளத்தல் (125)	CO2
நாலடியார்	- அரும்பெறல்…(பாடல் எண்:34)	
சிறுபஞ்சமூலம்	- பூவாது காய்க்கும்…(பாடல் எண்:22)	
ஐந்திணைஐம்பது	- சுனைவாய்ச் சிறுநீரை…(பாடல் எண்:38)	
கார்நாற்பது	- கருவிளை கண்மலர்போல் பூத்தன…(பாடல் எண்:34)	
களவழிநாற்பது	- ஞாட்பினுளெஞ்சிய (பாடல் எண்:2)	

UNIT-III	சங்க இலக்கியம் - எட்டுத்தொகை	**Periods: 09**

ஐங்குறுநூறு	- பாடல் எண்:44 - தோழி கூற்று	CO3
குறுந்தொகை	- பாடல் எண்:224 - தலைவி கூற்று	
நற்றிணை	- பாடல் எண்:284 - தலைவன் கூற்று	
அகநானூறு	- பாடல் எண்:145 - செவிலி கூற்று	
புறநானூறு	- பாடல் எண்:102 - ஒளவையார்	
பரிபாடல்	- பாடல் எண்:3 - திருமால் வாழ்த்து (1-11வரிகள்)	

UNIT-IV	பத்துப்பாட்டு	**Periods: 09**

பொருநராற்றுப்படை	- வாரியும் வடித்தும்…முதல் பெருந்தகு பாடினி வரை (25-47)	CO4
சிறுபாணாற்றுப்படை	- பைந்தளை அவரை…முதல் வென்றிவேலூர் எய்தின வரை (164-173)	
பெரும்பாணாற்றுப்படை	- பார்வையாத்த…முதல் பதம் மிகப் பருகுவீர் வரை (95-105)	
குறிஞ்சிப்பாட்டு	- அண்ணல் நெடுங்கோடு…முதல் சிவந்தகண்ணேம் வரை (54-61)	
மதுரைக்காஞ்சி	- மைபடுபெருந்தோள்…முதல் பெரும்பெயர் மதுரை வரை (687-699)	
நெடுநல்வாடை	- குளிர்காலக்காட்சி- கல்லென் துவலைத்…முதல் பண்ணுமுறை நிறுப்ப வரை (64-70)	

UNIT-V	மொழிப்பயிற்சி, இலக்கியவரலாறு		Periods: 09

1.முதல், கரு, உரிப்பொருள் அறிதல் 2.அலகிட்டு வாய்ப்பாடு 3.அணிகள் அறிதல் **இலக்கிய வரலாறு** காப்பியம், அறஇலக்கியம், சங்க இலக்கியம் குறித்தப் பாடப்பகுதியை ஒட்டிய இலக்கிய வரலாறு.	**CO5**

Lecture Periods: 45	Tutorial Periods:-	Practical Periods:-	TotalPeriods:45

Text Books

1. **சிவகுமார்,எஸ்., -கொங்குதேர்வாழ்க்கை,** பாடல் தொகுப்பு நூல் - தொகுதி -1, யுனைடெட் ரைட்டர்ஸ்,சென்னை -86. முதற்பதிப்பு.2003.
2. **சாமிநாதையர் டாக்டர் உ.வே.** குறுந்தொகை மூலமும் உரையும், டாக்டர் உ.வே.சாமிநாதையர் நூல் நிலையம், வெளியீட்டெண்: 277,பெசன்ட் நகர், சென்னை– 600 090.எட்டாம் பதிப்பு– 2020.
3. **வேங்கடராமன், வித்துவான்.ஹெச். (பதி.)** - நற்றிணை மூலமும் உரையும்,டாக்டர்உ.வே.சாமிநாதையர் நூல் நிலையம், வெளியீட்டெண்: 277,பெசன்ட் நகர்,சென்னை– 600 090. எட்டாம் பதிப்பு– 2020.
4. திருவள்ளுவர்- சேயோன் டாக்டர் - திருக்குறள்,மயிலைத் திருவள்ளுவர்தமிழ்ச் சங்கம்,184,பிராட்வே,சென்னை 600 108
5. வேங்கடசாமிநாட்டார்,ந.மு., - கார்நாற்பது,களவழிநாற்பது– சாரதாபதிப்பகம்,சாந்திஅடுக்ககம், ஸ்ரீகிருஷ்ணபுரம் தெரு, இராயப்பேட்டை,சென்னை -14. முதற்பதிப்பு: 2005.

Reference Books

1. **சிற்பிபாலசுப்பிரமணியம் மற்றும் நீலபத்மநாபன் (ப.ஆசி.) –புதியதமிழ் இலக்கியவரலாறு, தொகுதி-1,2,3,** சாகித்திய அகாதெமி, புதுடெல்லி, 2013.
2. **பாக்கியமேரி, வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு (செம்மை மற்றும் விரிவுப் பதிப்பு),** பாரிநிலையம். சென்னை,
3. **ஆனந்தன். சு. முனைவர்.,** - தமிழ் இலக்கியவரலாறு,கண்மணிபதீப்பகம், திருச்சி-2. இருபத்தி மூன்றாம் பதிப்பு– 2015.
4. **பரந்தாமனார்,அ.கி.,நல்லதமிழ் எழுதவேண்டுமா,**பாரிநிலையம்,சென்னை, 1998.
5. **சம்பத், இரா., (பதி) -தொல்காப்பியக் கவிதையியல் வடிவம்-பாடுபொருள்-உத்தி-வகைமை,**புதுச்சேரிமொழியியல் பண்பாட்டுஆராய்ச்சிநிறுவனம், புதுச்சேரி-605 001. முதற்பதிப்பு–அக்டோபர் 2015.

Web References

2. http://www.tamilvu.org
3. http://www.tamilweb.com
4. http://www.tamilkodal.com
4. www.store.tamillexican.com
5. www.kala.tamilforu.blogspot.com
6. www.noolagam.com

* TE – Theory Exam, LE – Lab Exam

COs/POs/PSOs Mapping

Cos	Program Outcomes (POs)					Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO 3
1	3	3	3	3	3	3	3	3
2	3	3	3	3	3	3	3	3
3	3	2	3	3	2	3	3	3
4	2	3	2	3	2	2	3	2
5	3	2	3	2	3	3	3	3

Correlation Level: 1: Low, 2: Moderate, 3: High

Evaluation Method

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	10	5	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Department	**FRENCH**				Programme: **B.Sc. (Mathematics)**				
Semester	**Second**				Course Category Code: **AEC**		*End Semester Exam Type:**TE**		
Course Code	**A23FRT202C**				Periods/Week		Credit	Maximum Marks	
		L	T	P	C	CAM	ESE	TM	
Course Name	**FRENCH II**	**3**	**0**	**0**	**2**	**25**	**75**	**100**	
(Common to **BA., B.Sc., BBA., B.COM., BCA.,**)									
Prerequisite	Basic knowledge of French language								
Course Objective	To introduce the basics of French language to the students								
	To enable the students to read, understand and write simple sentences								
	To help them to grasp the fundamentals of French grammar								
	To make the students to formulate correct phrases								
	To introduce them French and Francophone countries and their cultures								
Course Outcomes	***On completion of the course, the students will be able to***							BT Mapping (Highest Level)	
	CO1	Have a general understanding of the language						**K3**	
	CO2	Analyze and interpret simple phrases written in French						**K3**	
	CO3	Have the basics of French grammar						**K3**	
	CO4	Communicate and ask basic questions in French language						**K3**	
	CO5	Appreciate the diversity and multiplicity of French and Francophone world						**K3**	

UNIT-I	**Parler des choses**	**Periods:09**
1. Qu'est-ce qu'on offre? 2. L'interro-négation. 3. On Solde 4. Le comparatif. 5. Les fêtes		**CO1**

UNIT-II	**Découvrir le futur**	**Periods:09**
1. Découvrir Paris en bus avec l'open tour. 2. Les verbes pronominaux 3. Si vous gagnez, vous ferez quoi? 4. Le futur simple 1. Les superlatifs.		**CO2**

UNIT-III	**Exprimer le climat et temps**	**Periods:09**
1. Parasol ou parapluie 2. Le climat en France. 3. Quand il est midi à Paris? 4. L'emploi du temps:métro, boulot, restau. 5. Parler du temps qu'il fait.		**CO3**

UNIT-IV	**Paris et France - une vue**	**Periods:09**
1. Vous allez vivre à Paris? 2. Les régions de France 3. L'avenir du français. 4. La place des adjectifs. 5. Souvenirs d'enfance.		**CO4**

UNIT-V	**Pratiquer la langue**	**Periods:09**
1. J'ai fait mes études à Lyon. 2. Retour des Antilles 3. Raconter ses vacances. 4. Au voleur! Au voleur! 5. Les journaux en France.		**CO5**

Lecture Periods:45	**Tutorial Periods:**	**Practical Periods: -**	**LecturePeriods:45**
TextBooks			

1. Sylvie Poisson Quinton and Michèle Maheo, *Festival 1 Méthode de Français*, CLE editions, 2009
2. Nathalie Hirschsprung and Tony Tricot, *Cosmopolite 1*, Hachette editions, 2017

ReferenceBooks

2. Régine Mérieux and Yves Loiseau, *Latitudes 1*, Didier editions, 2017

3. Annie Berthet and Emmanuelle Daili, *Alter Ego + A1*, Hachette editions, 2012

4. Bruno Giradeau, *Réussir le Delf A1*, Didier editions, 2019

Web References

2. https://www.tv5monde.com
3. https://www.rfi.fr
4. https://www.lemonde.fr
5. https://www.frenchpodcasts.com
6. https://www.coursera.org

* TE – Theory Exam, LE – Lab Exam

COs/POs/PSOs Mapping

Cos	Program Outcomes (POs)					Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
1	3	3	3	3	3	1	2	3
2	3	3	3	3	3	1	2	3
3	3	3	3	3	3	1	2	3
4	2	3	3	3	3	1	2	3
5	1	2	1	1	1	1	2	3

Evaluation Method

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	10		5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Department	ENGLISH		Programme: **B.Sc. (Mathematics)**				
Semester	**Second**		Course Category Code:AEC		End Semester Exam Type: **TE**		
Course Code	**A23GET202C**		Periods / Week		Credit	Maximum Marks	
			L	T	P	C	CAM	ESE	TM
Course Name	**GENERAL ENGLISH - II**		3	0	0	2	25	75	100
(Common to B.A.., B.Sc. and BCA Branches)									
Prerequisite	Basic part-two language and knowledge gained from Grammar and Composition.								

Department	ENGLISH	Programme: **B.Sc. (Mathematics)**				
Semester	**Second**	Course Category Code:AEC	End Semester Exam Type: **TE**			
Course Code	**A23GET202C**	Periods / Week		Credit	Maximum Marks	
		L T P		C	CAM ESE TM	
Course Name	**GENERAL ENGLISH - II**	3 0 0		2	25 75 100	
(Common to B.A.., B.Sc. and BCA Branches)						
Prerequisite	Basic part-two language and knowledge gained from Grammar and Composition.					

Course Objectives	To train students to identify poetic forms and issues related to contexts	
	To enable the student in the skill of reading for ideas	
	To enable the students to enjoy the literature through the work of great writer	
	To introduce drama as a social product and a literary form	
	To hone composition skills in students	

Course Outcomes	**On completion of the course, the students will be able to**	BT Mapping (Highest Level)
	CO1 Comprehend and discuss the various facets of selected poems	**K3**
	CO2 Evaluate and Criticize the prose texts.	**K3**
	CO3 Illustrate various reflections and instances in short stories with personal experiences	**K3**
	CO4 Develop critical appreciation based on the understanding of the prescribed texts	**K3**
	CO5 Enhance the writing skills for specific purposes	**K3**

UNIT-I	POETRY	Periods: 09	
1. Nissim Ezekiel - *Minority Poem* 2. Sarojini Naidu – *Indian Weaver* 3. Walt Whitman – *O Captain My Captain* 4. William Blake – *Tyger* 5. Rabindranath Tagore – *Paper Boat*			CO1

UNIT-II	PROSE	Periods: 09	
1. Jawaharlal Nehru – *A Tryst With Destiny* 2. Martin Luther King – *I have a dream* 3. Swami Vivekananda – *Speech at world Parliament of Religion Chicago*			CO2

UNIT-III	SHORT STORIES	Periods: 09	
1. Arthur Canon Doyle – *A Scandal in Bohemia* 2. Stephen Crane – *The Open Boat*			CO3

UNIT-IV	DRAMA	Periods: 09	
1. Cedric Mount Short – *The Never Never Nest* 2. Fritz Karinthy – *Refund*			CO4

UNIT-V	GRAMMAR AND COMPOSITION	Periods: 09	
1. Cause and Effect Analysis 2. Note Making 3. Picture Comprehension 4. Sentence Pattern 5. Sentence Punctuation			CO5

Lecture Periods: 45	Tutorial Periods: 0	Practical Periods: -	Total Periods: 45
Text Books			

1. Pegasus, *Scandal in Bohemia & Other Stories*, B Jain Publisher, 2016.
2. Stephen Crane, *The Open Boat and Other Stories*, Createspace Independent Publisher, 2017.
3. Wren & Martin, *Primary School English Grammar and Composition*, Generics Publication, 2023.

Reference Books

1. Anjli Sehrawat, *Mother's Day : Bhagat Phoolsingh Women's University,* Notion Press Publication, 2022.
2. Martin Luther, Heming Daoudi, *Martin Luther King's I have a dream speech*, Kindle Edition, 2020.
3. Stephen Crane, *The Open Boat Stephen Crane*, Createspace Independent Publication, 2013.
4. Rabindranath Tagore, William Radice, *Selected Poems: Rabindranath Tagore*, Penguin Publication, 2000.
5. Swami Tapasyananda, *Swami Vivekananda his life and Legacy*, Ramakrishna Math Publication, 2008.

Web References

7. https://allpoetry.com/Minority-Poem
8. http://www.sourcecodeonline.com/list?q=the_never_never_nest_author_cedric_mount
9. https://www.cam.ac.uk/files/a-tryst-with-destiny/index.html
10. https://poets.org/poem/tyger
11. https://www.poetryfoundation.org/poems/45474/o-captain-my-captain

* TE – Theory Exam, LE – Lab Exam

COs/POs/PSOs Mapping

COs	Program Outcomes (POs)					Program Specific Outcomes (PSOs)		
	PO 1	PO 2	PO 3	PO 4	PO 5	PSO 1	PSO 2	PSO 3
1	3	2	3	2	3	3	3	3
2	2	3	3	3	2	2	2	2
3	3	2	2	3	1	3	2	3
4	2	3	3	2	1	2	3	2
5	3	3	3	3	3	2	2	3

Evaluation Method

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	10	5	5	5		75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Department	MATHEMATICS	Programme: B.Sc (Mathematics)					
Semester	Second	Course Category Code: SEC *End Semester Exam Type: LE					
Course Code	A20MAS201D	Periods / Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	LOGICAL REASONING	0	0	6	3	50	50	100

Prerequisite	Mathematics should be a subject in +2.	
Course Objectives	To familiarize the concept of Number Series, Alphabet Series, and Alpha-Numeric Series.	
	To know the Simple Analogy, Choosing the Analogous pair, Double Analogy and Word Analogy	
	To gain the knowledge of Number and Letter Classification Problems.	
	To understand the concept of Coding and Decoding.	
	To know the concept of blood relations.	

Course Outcome	On completion of the course, the students will be able to		BT Mapping (Highest Level)
	CO1	Analyze and complete various series patterns.	K3
	CO2	Apply analogical reasoning to identify and complete analogous pairs.	K3
	CO3	Classify objects and identify odd ones out based on given criteria.	K2
	CO4	Decode and encode messages using various coding techniques.	K3
	CO5	Solve puzzles and problems related to blood relations and directional sense.	K2

UNIT-I	SERIES COMPLETION	Periods: 10	
Number Series, Alphabet Series, and Alpha-Numeric Series. Students will learn to identify and complete various series patterns.			CO1
UNIT-II	ANALOGY	Periods: 10	
The Analogous Pair, Simple Analogy, Choosing the Analogous pair, Double Analogy, Word Analogy, and Number Analogy			CO2
UNIT-III	CLASSIFICATION / ODD ONE OUT	Periods: 10	
Word Classification, Number Classification, and Letter Classification, helping students identify patterns and outliers.			CO3
UNIT-IV	CODING – DECODING	Periods: 10	
Letter Coding, Number Coding, Matrix Coding, Substitution, Deciphering Message Word Codes, and Jumbled Coding, enhancing code-based problem-solving skills.			CO4
UNIT-V	BLOOD RELATIONS	Periods: 8	
Deciphering Jumbled up Descriptions and solving Relation Puzzles, including Direction Sense Tests.			CO5

Lecture Periods: 45	Tutorial Periods: 15	Practical Periods: -	Total Periods: 60

Text Books

1. Quantitative Aptitude for competitive Examination, R.S. Aggarwal. S. Chand and company Ltd, 152, Anna salai, Chennai. (2001)

2. Quantitative Aptitude and Reasoning Praveen PHI P.Ltd.

3. Scope and treatment as in "Quantitative Aptitude" by R.S. Aggarwal. S. Chand and company Ltd., Ram Nagar, New Delhi (2007).

Reference Books

1. Quantitative Aptitude for competitive Examination-Abhijit Guha-TMH.
2. Verbal and Non-Verbal Reasoning" by R.S. Agarwal
3. Mathematics for life-M. Immaclate-Nanjil offset Printers.
4.   Objective Arithmetic's-R. S-Aggarwal-S. Chand & Co.

Web References

1.   https://www.careerbless.com/aptitude/qa/home.php

2.   https://www.javatpoint.com/aptitude/quantitative

     https://www.letsstudytogether.co/quantitative-aptitude-topic-wise-questions-and-answers-pdf- download/

     * TE – Theory Exam, LE – Lab Exam

Evaluation Method

Assessment	Continuous Assessment Marks (CAM)			End Semester Examination (ESE) Marks	Total Marks
	Model Exam	**Record**	**Attendance**		
Marks	30	10	10	50	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Department	**Mathematics**			Programme: **B.Sc. Mathematics**				
Semester	**Second**			Course category Code: **VAC**		End Semester Exam Type:-**LE**		
Course Code	**A23VAC201C**	Periods / Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	**UNDERSTANDING INDIA**	2	0	0	2	100	0	100
(Common to all UG Programmes)								
Prerequisite	Basic Knowledge of geography, knowledge systems and the Constitutions of India							

Course Objective	To understand the Geography of India	**CO1**
	To know more about the India's freedom struggle and knowledge systems	**CO2**
	To understand the myths, folklore and tribal cultures of India	**CO3**
	To know about the social structure, caste, community class and gender	**CO4**
	To understand the evolution of states, nature, traditional and modern and the Indian constitution	**C05**

Course Outcome	*On completion of the course, the students*		BT Mapping (Highest Level)
	CO1	Understood the Geography of India	**K3**
	CO2	Acquainted knowledge about the India's freedom struggle and knowledge systems.	**K3**
	CO3	Understood the myths, folkfore and tribal culture of India	**K3**
	CO4	Gained knowledge about the social structure, caste, community and gender	**K3**
	CO5	Understood the evolution of states, nature and tradition of Indian Constituion.	**K3**

UNIT-I	**GEOGRAPHY OF INDIA**	**Periods: 06**	
• India on the map of the world and its neighbouring countries • Geographical diversities			**CO 1**

UNIT-II	**HISTORY OF INDIA**	**Periods: 06**	
• India's Freedom Struggle • An introduction to Indian knowledge systems			**CO 2**

UNIT-III	**COMMUNICATING CULTURE**	**Periods: 06**	
• Oral narratives: Myths, tales and folklore • Introduction to the Tribal Cultures of India			**CO3**

UNIT-IV	**INDIAN SOCIAL STRUCTURE**	**Periods: 06**	
• Continuity and change of the Indian Social Structure: Caste, Community, Class and Gender			**CO 4**

UNIT - V	**UNDERSTANDING INDIAN POLITY**	**Periods: 06**	
• The evolution of State in India: Nature and origin • Interpretating India: Traditional, Modern and Contemporary • Constitution as a living document			**CO5**

Lecture Periods: 30	**Tutorial Periods: -**	**Practical Periods:**	**Total Periods: 30**

Text Books.

- Ramesh Dutta Dikshit, *Political Geography: Politics of Place and Spatiality of Politics,* Macmillan Education,2020.
- Pathak, C. R. 2003: Spatial Structure and Processes of Development in India. Regional Science Assoc., Kolkata.

- Bose D. M., S. N. Sen and B. V. Subbarayappa ed. (1971) *A Concise History of Science in India,* Indian National Science Academy, New Delhi.

- Chandra, Bipan, Amales Tripathi & Barun De (1972), *Freedom Struggle*, National Book Trust, New Delhi.

- *The Cultural Heritage of India Series,* 8 Volumes (2002), Ramakrishna Mission Institute, Calcutta.

- Stuart H. Blackburn, "The Folk Hero and Class Interests in Tamil Heroic Ballads", Asian Folklore Studies, Vol. 37, No. 1 (1978), pp. 131-149.

- Beatrix Hauser, "From Oral Tradition to "Folk Art": Reevaluating Bengali Scroll Paintings", in Asian Folklore Studies, Vol. 61, No. 1 (2002), pp. 105-122.

- Singh, Y. (1968). Caste and Class : Some Aspects of Continuity and Change. Sociological Bulletin, 17(2), 165–186. https://doi.org/10.1177/0038022919680205
  Singh, Y. (1986). Modernization of Indian Tradition: A Systemic Study of Social Change. India: Rawat Publications

- Thapar, Romila. *Indian Cultures as Heritage: Contemporary Pasts.* London, Seagull Books, 2021

Reference Books
- Tiwari, R.C. (2007) Geography of India. Prayag Pustak Bhawan, Allahabad 12. Sharma, T.C. (2013) Economic Geography of India. Rawat Publication, Jaipur

- Husain, S. Abid. (2003). *The National Culture of India*, National Book Trust, New Delhi.

- Kapoor, Kapil and Avadesh Kumar Singh ed. (2005), *Indian Knowledge Systems*, 2 Volumes, DK Printworld, New Delhi.

- Mohanta, Basant Kumar and Vipin Kumar Singh ed. (2012), Traditional *Knowledge System and Technology in India,* Pratibha Prakashan

- Komal Kothari, "Myths, Tales and Folklore: Exploring the Substratum of Cinema" pdf .

- Robinson, R. (2004). Sociology of Religion in India. India: SAGE Publications.

- Srinivas, M. N. (2000). Caste: Its 20Th Century Avatar. India: Penguin Books Limited.

- Jamil, G. (2021). Women in Social Change. SAGE Publishing India.

- Bhasin, K. (2000). Understanding Gender.
- Venkataraghavan Subha Srinivasan. *The Origin Story of India's States.* Penguin Random House India Private Limited, 25 Oct. 2021.
- J Sai Deepak. *India That Is Bharat : Coloniality, Civilisation, Constitution.* New Delhi, Bloomsbury, 2021.

Evaluation Method

Marks Distribution	Assessment			ESE MARKS	TOTAL MARKS
	CAT I & CAT II	Report	Attendance		
	70	20	10	-	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Department	**MATHEMATICS**			Programme: **B.Sc. Mathematics**			
Semester	**Second**			Course Category Code: **VAC**		End Semester Exam Type: **LE**	
Course Code	**A23VAC202C**	Periods / Week			Credit	Maximum Marks	
		L	T	P	C	CAM	ESE	TM
Course Name	**ENVIRONMENTAL STUDIES**	2	0	0	2	100	0	100

Prerequisite	Basic knowledge of Biology, Physics, Chemistry, Meteorology related basic socio -culture concepts, factors relate to nature or environment	
Course Objectives	To know the structure and function of an ecosystem.	**CO1**
	To imbibe an aesthetic value with respect to biodiversity, understand the threats and its conservation and appreciate the concept of interdependence.	**CO2**
	To know the causes of types of pollution and disaster management.	**CO3**
	To observe and discover the surrounding environment through field work.	**CO4**
	To know the structure and function of an ecosystem.	**C05**
Course Outcomes	**On completion of the course, the students will be able to**	BT Mapping (Highest Level)
	CO1 Understand about the various resources	**K3**
	CO2 Learn about the biodiversity	**K3**
	CO3 Learn the different types of pollution and to prevent the pollution	**K3**
	CO4 Know about the pollution Act	**K3**
	CO5 Observe various environmental issues in surroundings	**K3**

UNIT-I	**ENVIRONMENTAL SCIENCES: NATURAL RESOURCES**	Periods: 06	
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.			**CO1**
UNIT-II	**ECOSYSTEM, BIODIVERSITY AND ITS CONSERVATION**	Periods: 06	
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) andlocal levels - Hotspots, threats to biodiversity - conservationof biodiversity – Insitu & Exsitu			**CO2**
UNIT-III	**ENVIRONMENTAL POLLUTION AND MANAGE**	Periods: 06	
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 inprevention of pollution - pollution case studies			**CO3**
UNIT-IV	**SOCIAL ISSUES - HUMAN POPULATION**	Periods: 06	
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 ValueEducation - Environmental Health - HIV/AIDS - Role of IT in Environment and Human Health - Womenand child welfare -Public awareness -Case studies.			**CO4**
UNIT-V	**NATIONAL INTEGRATION AND COMMUNAL HARMONY**	**Periods: 06**	
The roleof Youth organizations in national integration, NGOs, Diversity of Indian Nation, Importance of National integration communal harmony for the development of nation,Indian Constitution, Building Ethical human Relationships, Universal Human Values, Harmony of self and Harmony of nation.			**CO5**

Lecture Periods: -	**Tutorial Periods: -**	**Practical Periods: 30**	**Total Periods: 30**
Text Books			

1. Joseph, Siby K and Mahodaya Bharat (Ed.), (2007), Essays on Conflict Resolution, Institute of Gandhian Studies, Wardha

2. Barman Prateeti and Goswami Triveni (Ed.), (2009), Document on Peace Education, Akansha Publishing House, New Delhi

3. Sharma Anand, (2007), Gandhian Way, Academic Foundation, New Delhi Myers G.Davi (2007). Social Psychology. New Delhi: Tata Mc.Graw Hill.

4.Taylor E.Shelly et.al (2006), Social Psychology (12th Edn.), New Delhi, Pearson Prentice Hall Singh.

Reference Books

1.Madhu (2003), Understanding Life Skills, background paper prepared for education for all: The leap to equality, Government of India report, New Delhi.

2.Sandhan (2005), Life Skilss Education, Training Module, Society for education and development, Jaipur. Radakrishnan Nair and SunithaRajan (2012), Life Skill Education: Evidences form the field, RGNIYD publication, Sriperumbudur

3.National Service Scheme Manual (Revised) , Government of India, Ministry of Youth Affairs and Sports, New Delhi.

4.National Service Scheme in India: A Case study of Karnataka, M. B. Dishad, Trust Publications, 2001

Web References

1. http://www.thebetterindia.com/140/national-service-scheme-nss/

2.http://en.wikipedia.org/wiki/national-service-scheme 19=http://nss.nic.in/adminstruct

3.http://nss.nic.in/propexpan

4.http://nss.nic. in

5.http://socialworknss.org/about.html

* TE – Theory Exam, LE – Lab Exam

Evaluation Method

Assessment	Continuous Assessment Marks (CAM)				End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Assignment*	Attendance		
Marks	70	20		10	0	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

A23MAC202D	**CERTIFICATION COURSES**	**L**	**T**	**P**	**C**	**Hrs**
		0	**0**	4	0	**40**

Students shall choose an international certification course offered by the reputed organizations like Google, Microsoft, Information Technology Specialist, Project Management Institute, Adobe, CISCO Networking Academy, AWS Academy, Tally and Autodesk, Eplan, etc. The duration of the course is 40 hours specified in the curriculum, which will be offered through Centre of Excellence.

Pass /Fail will be determined on the basis of participation, attendance, performance and completion of the course.

If a candidate Fails, he/she has to repeat the course in the subsequent years. Pass in this course is mandatory for the award of degree.

Department	MATHEMATICS	Programme: B.Sc (Mathematics)						
Semester	Second	Course Category Code: **MJD** *End Semester Exam Type: **TE**						
Course Code	**A23MAT203D**	Periods / Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	**MATRICES AND THEORY OF EQUATIONS**	3	1	0	4	25	75	100

Prerequisite	**Mathematics** should be a subject in +2.
Course Objectives	To introduce the idea of matrices and to learn about the algebra of matrices
	To solve system linear equations using matrix Theory
	To develop the concept of the Sum of the powers of the roots.
	To introduce variety roots.
	To study the concept of biquadratic equations

Course Outcome	**On completion of the course, the students will be able to**		BT Mapping (Highest Level)
	CO1	Apply the concept of Matrix transformations.	**K3**
	CO2	Demonstrate an understanding of applications of Matrices	**K3**
	CO3	To learn the relation between the co-efficient and roots of polynomial equations.	**K2**
	CO4	Solve problems related to Multiple and Nature of position of roots	**K3**
	CO5	Analytic Methods for solving the polynomial equation of degrees 3 & 4.	**K2**

UNIT-I	**LINEAR SYSTEMS**	**Periods: 12**
Linear systems - Matrices - Matrix operations - Properties of Matrix operation, Matrix transformations.		CO1

UNIT-II	**SOLUTIONS OF LINEAR SYSTEMS OF EQUATIONS**	**Periods: 12**
Solutions of Linear systems of equations - Row echelon from reduced row echelon form – Polynomial interpolation - The inverse of a Matrix. - Linear Systems and inverses - LU- Factorization Method		CO2

UNIT-III	**THEORY OF EQUATIONS**	**Periods: 12**
Division algorithm - Relation between roots and coefficients - Sum of the powers of the roots.		CO3

UNIT-IV	**THEORY OF EQUATIONS[Contd]**	**Periods: 12**
Reciprocal equations - Transformation of equations: - Multiple roots - Nature of position of roots - Sturm's Theorem – Descarte's Rule.		CO4

UNIT-V	**THEORY OF EQUATIONS[Contd]**	**Periods: 12**
Cardan's Method for solving Cubic equations – Ferrari's Method for solving biquadratic equations - New Newton's Method- Horner's Method		CO5

Lecture Periods: 45	Tutorial Periods: 15	Practical Periods: -	Total Periods: 60

Text Books

1. Bernard Kolman Drid R. Hill, Introductory Linear Algebra, (8e),Pearson India (2011).
2. Theory of Equations, Hari Kishan, Atlantic Publishers, 2022.
3. Theory of Equations, Lalji Prasad, New Revised Edition, 2016.

Reference Books.

1. S. Arumugam and A Thangaand Isaac, Set Theory Number System and Theory of Equations, New Gamma publishing house (1997.)
2. A Text Book of Theory Of Equations January 2020 by Manoranjan Kr. Singh.

Web References.

1. https://builtin.com/data-science/dot-product-matrix
2. https://math.emory.edu/~lchen41/teaching/2020_Fall/Section_2-7.pdf
3. https://www.dictionary.com/browse/division-algorithm
4. https://web.math.ucsb.edu/~padraic/mathcamp_2013/root_find_alg/Mathcamp_2013_Root-Finding_Algorithms_Day_2.pdf
5. https://cs.fit.edu/~wds/classes/adm/Lectures/HornerPolynomial.pdf.

* TE – Theory Exam, LE – Lab Exam

COs/POs/PSOs Mapping

Cos	Program Outcomes (POs)					Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
1	2	3	3	3	2	3	2	1
2	3	2	3	2	1	3	2	1
3	3	2	3	3	2	2	3	1
4	2	3	3	3	3	3	2	2
5	3	2	3	3	2	3	2	1

Correlation Level: 1 - Low, 2 - Medium, 3 – High

Evaluation Method

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	10		5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus