SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE

(An Autonomous Institution)
(Approved by AICTE, New Delhi & Affiliated to Pondicherry University)
(Accredited by NBA AICTE, New Delhi, ISO 9001:2008 Certified Institution &
Accredited by NAAC with "A" Grade)
Madagadipet, Puducherry 605 107

Department of Mathematics

Minutes of Board of Studies

The First Board of Studies meeting of Department of Mathematics was held on 27th August 2020 at 10:00 A.M in the Centre IV , Department of Science and Humanities Sri Manakula Vinayagar Engineering College with the 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	Responsibility in the BoS	Signature
1	Dr. T.Gayathri., M.Sc.,M.Phil.,Ph.D Professor and Head Department of Mathematics Sri Manakula Vinayagar Engineering College, Puducherry	Chairman	T. Gay
External Members			
2	Dr.S.Tamilselvan, M.Sc.,M.Phil., Ph.D. Professor & Head Department of Mathematics Annamalai University Chidambaram	External Member	
3	Dr.P.Balaji, M.Sc., M.Phil.,Ph.D Assistant Professor (Stage II) Department of Mathematics SCSVMV university Kanchipuram.	External Member	P. Psalaji
4	Dr.S.Srinivasan , M.Sc.,M.Phil., Ph.D. Assistant Professor Department of Mathematics Periyar Government Arts and Science College Cuddalore	External Member	SSrinivasa
Internal Members			
5	Dr. G.Suresh, M.Sc., M.Phil., Ph.D, Professor Department of Mathematics	Internal Member	G. Sur
6	B.Kavitha , M.Sc., M.Phil., (Ph.D.) Associate Professor Department of Mathematics	Internal Member	B. Kav
7	S.P.Lavanya , M.Sc., M.Phil Assistant Professor Department of Mathematics	Internal Member	S.P. Lavanya

8	N.Vijayan., M.Sc., M.Phil Assistant Professor	Internal Member	
9	M.Egalite Francis,, M.Sc., M.Phil., Assistant Professor	Internal Member	
10	S. Asokan., M.Sc., M.Phil., Assistant Professor / Physics	Internal Member	
11	Dr.A. Rajappa., M.Sc., M.Phil., Ph.D., Associate Professor /Chemistry	Internal Member	
12	G.Namitha., M.Sc., M.Phil., Assistant Professor/ English	Internal Member	
Co-opted Members			
13	Mr. G. Indragoby Associate Director Sensipie Software Solutions(p)Ltd., Chennai	Co-opted Member	

Agenda of the Meeting

1) Discuss about the curriculum Structure of B.Sc., Mathematics
2) To discuss and approve the B.Sc., Degree Regulations 2020 (R-2020), Curriculum from I to VI Semesters and Syllabi from I to II semesters for the B.Sc., Mathematics and the students admitted in the Academic Year 2020-21. (First Year)
3) To discuss about the uniqueness of the Curriculum (R-2020)
4) To discuss and approve Evaluation Systems
5) To discuss about the Innovative Teaching / Practices Methodology adopted to handle the emerging / Advanced Technological concept courses
6) Any other item with the permission of chair

Minutes of the Meeting

Dr. T.Gayathri, Chairman, BoS opened the meeting by welcoming and introducing the external members, to the internal and co-opted members and thanked them for accepting to become the member of the Board of Studies and the meeting thereafter deliberated on agenda items that had been approved by the Chairman.

Item:1	**Curriculum Structure** Recommended and forwarded to Academic Council
Item:2	**Suggestions given for Curriculum 2020** 1. Regarding the Statistics- I Lab OR Programming was suggested. 2. Regarding the Statistics- II Lab MATLAB was suggested. 3. Suggested to Rename the Mathematical Modelling Course. 4. Suggested to give the heading for every unit. 5. Suggested to give the only one text book for each course.

	6. Suggested to introduce Fuzzy Algebra as a discipline specific elective. 7. Suggested to give graph theory as a discipline core course **These suggestions were incorporated in the curriculum 2020 and approved by the expert members and Recommended to Academic council**
Item:3	**Regulation 2020** Approved and forwarded to Academic Council
Item:4	**Curriculum (R-2020)** Accepted and forwarded to Academic Council
Item:5	**Item:6** Ph.D Regulations has been approved and Recommended to Academic Council
Item:6	**Any other agenda - Nil**

The meeting was concluded at 11.30 AM with vote of thanks by **Dr. T. Gayathri**, Head of the Department, Mathematics.

T. Gay

Dr.T.Gayathri
Chairman/ BOS

Dr.V.S.K.Venkatachalapathy
Director cum Principal
Chairman/Academic Council

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BACHELOR OF SCIENCE

IN

MATHEMATICS

CURRICULUM

(For students admitted from academic year 2020-2021 onwards)

YEAR I / SEMESTER I										
				Periods				Max Marks		
SI. NO	Course Code	Course Title	Course Category	Lecture Hours	Tutorial Hours	Lab/ Practical Hours	Credits	CAM	ESM	Total Marks
Theory										
1	A20TAT101	Language I	**ML**	3	0	0	3	25	75	100
2	**A20ENT101**	English I	**Language**	3	0	0	3	25	75	100
3	A20MAT101	Differential calculus	**DSC**	3	1	0	4	25	75	100
4	A20MAT102	Trigonometry	**DSC**	3	1	0	4	25	75	100
5	A20MAT103	Analytical Geometry 3D	**DSC**	3	1	0	4	25	75	100
6	**A20PHT101**	Physics	**IDC**	3	1	0	4	25	75	100
Practical										
7	**A20PHP101**	Physics lab	**IDC Lab**	0	0	2	2	50	50	100
Employability Enhancement Course										
8	A20MAO101	EEC1	**EEC**	2	0	0	2	100	0	100
Ability Enhancement Compulsory Course										
9	**A20AET101**	Value Education	**AECC**	2	0	0	2	100	0	100
		Total		**22**	**4**	**2**	24	**200**	**500**	**700**

	YEAR I / SEMESTER II									
				Periods				Max Marks		
SI. NO	Course Code	Course Title	Course Category	Lecture Hours	Tutorial Hours	Lab/ Practical Hours	Credits	CAM	ESM	Total Mark
Theory										
1	A20TAT202	Language II	**ML**	3	0	0	3	25	75	100
2	**A20ENT202**	English II	**Language**	3	0	0	3	25	75	100
3	A20MAT204	Sequence and Series	**DSC 4**	3	1	0	4	25	75	100
4	A20MAT205	Ordinary Differential Equation	**DSC 5**	3	1	0	4	25	75	100
5	A20MAT206	Integral Calculus	**DSC 6**	3	1	0	4	25	75	100
6	**A20CHT202**	Chemistry	**IDC2**	3	1	0	4	25	75	100
Practical										
7	A20CHP202	Chemistry lab	**IDC2 Lab**	0	0	2	2	50	50	100
Employability Enhancement Course										
8	A20MAO202	EEC2	**EEC**	2	0	0	2	100	0	100
Ability Enhancement Compulsory Course										
9	A20AET202	Environmental studies	**AECC**	2	0	0	0	100	0	100
Extension Activity										
10	-	Yoga/NSS/NCC/Physical	EXTENSION	0	0	1	1	50	0	50
	Total			**22**	**4**	**3**	**24**	**200**	**500**	**700**

YEAR II / SEMESTER III										
				Periods				Max Marks		
SI. NO	Course Code	Course Category	Course Title	Lecture Hours	Tutorial Hours	Lab/ Practical Hours	Credits	CAM	ESM	Total Marks
Theory										
1	A20MAT307	DSC 7	Partial Differential Equation	3	1	0	4	25	75	100
2	A20MAT308	DSC 8	Fourier Series & Fourier Transforms	3	1	0	4	25	75	100
3	A20MAT309	DSC 9	Mechanics I (statics)	3	1	0	4	25	75	100
4	A20MAT 319	IDC3	Statistics - I	3	1	0	4	25	75	100
5	A20MAE30X	DSE 1	DSE 1	3	0	0	3	25	75	100
6	A20MAS301	SEC	SEC 1(numerical Method using C)	2	0	0	2	100	0	100
Practical										
7	A20MAP 319	IDC3 Lab	Statistics – I Lab	0	0	2	2	50	50	100
Employability Enhancement Course										
8	A20MAO303	EEC	EEC3	2	0	0	2	100	0	100
Total				**19**	**4**	**2**	**23**	**275**	**425**	**700**

YEAR II / SEMESTER IV										
				Periods				Max Marks		
SI. NO	Course Code	Course Category	Course Title	Lecture Hours	Tutorial Hours	Lab/ Practical Hours	Credits	CAM	ESM	Total Marks
Theory										
1	A20MAT410	DSC 10	Discrete mathematics	3	1	0	4	25	75	100
2	A20MAT411	DSC 11	Operations Research	3	1	0	4	25	75	100
3	A20MAT412	DSC 12	Mechanics II (Dynamics)	3	1	0	4	25	75	100
4	A20MAT420	IDC4	Statistics - II	3	1	0	4	25	75	100
5	A20MAE40X	DSE 2	DSE 2	3	0	0	3	25	75	100
6	A20 MAS 402	SEC	SEC 2 (Quantative Aptitude & Reasoning - I)	2	0	0	2	100	0	100
Practical										
7	A20MAP420	IDC34Lab	Statistics – II Lab	0	0	2	2	50	50	100
Employability Enhancement Course										
8	A20MAO404	EEC	EEC 4	2	0	0	2	100	0	100
Total				**19**	**4**	**2**	23	**275**	**425**	**700**

YEAR III / SEMESTER V										
				Periods				Max Marks		
SI. NO	**Course Code**	**Course Category**	**Course Title**	**Lecture Hours**	**Tutorial Hours**	**Lab/ Practical Hours**	**Credits**	**CAM**	**ESM**	**Total Marks**
Theory										
1	A20MAT513	**DSC 13**	Abstract Algebra	3	1	0	4	25	75	100
2	A20MAT514	**DSC 14**	Real Analysis-I	3	1	0	4	25	75	100
3	A20MAT515	**DSC 15**	Complex Analysis I	3	1	0	4	25	75	100
4	**A20XXT5XX**	**Open Elective I**	**Open Elective I**	3	0	0	3	25	75	100
5	A20MAE50X	**DSE 3**	DSE 3	3	0	0	3	25	75	100
6	**A20 MAS 503**	**SEC**	SEC 3 (Quantative Aptitude & Reasoning - II)	2	0	0	2	100	0	100
Employability Enhancement Course										
7	A20MAO505	**EEC**	EEC 5	2	0	0	2	100	0	100
Total				**19**	**3**	**0**	**20**	**225**	**375**	**600**

YEAR III / SEMESTER VI

Sl. NO	Course Code	Course Category	Course Title	Periods			Credits	Max Marks		
				Lecture Hours	Tutorial Hours	Lab/ Practical Hours		CAM	ESM	Total Marks
Theory										
1	A20MAT616	**DSC 16**	Linear Algebra	3	1	0	4	25	75	100
2	A20MAT617	**DSC 17**	Real Analysis-II	3	1	0	4	25	75	100
3	A20MAT618	**DSC 18**	Complex Analysis II	3	1	0	4	25	75	100
4	**A20XXT6XX**	**Open Elective II**	**Open Elective II**	3	0	0	3	25	75	100
5	A20MAE6XX	**DSE 4**	DSE 4	3	0	0	3	25	75	100
6	A20 MAS 604	**SEC**	SEC 4 (Mathematical Modelling)	2	0	0	2	100	0	100
	Total			**17**	**3**	**0**	20	**225**	**375**	**600**

B.Sc MATHEMATICS PROGRAM SUMMARY

	Credits	Credits Including AECC, EEC, EXTENSION	Lecture hours	Tutorial Hours	Lab/ Practical Hours	CAM	ESM	Total Marks	In – Campus Hours
First Semester Courses	24	28	22	4	2	**200**	**500**	**700**	32
Second Semester Courses	24	29	22	4	3	**200**	**500**	**700**	33
Third Semester Courses	23	25	19	4	2	**275**	**425**	**700**	29
Fourth Semester Courses	23	25	19	4	2	**275**	**425**	**700**	29
Fifth Semester Courses	20	22	19	3	0	**225**	**375**	**600**	26
Sixth Semester Courses	20	20	17	3	0	**225**	**375**	**600**	24
Grand Total	**134**	**149**	**118**	**22**	**9**	**1400**	**2600**	**4000**	**173**

DISCIPLINE SPECIFIC CORE COURSE

S. No	DSC	CODE	SEMESTER
1	Differential calculus	A20MAT101	I
2	Trigonometry	A20MAT102	I
3	Analytical Geometry 3D	A20MAT103	I
4	Sequence and Series	A20MAT204	II
5	Ordinary Differential Equation	A20MAT205	II
6	Integral Calculus	A20MAT206	II
7	Partial Differential Equation	A20MAT307	III
8	Fourier Series& Fourier Transforms	A20MAT308	III
9	Mechanics I (statics)	A20MAT309	III
10 I	Discrete mathematics	A20MAT410	IV
11	Operations Research	A20MAT411	IV
12	Mechanics II (Dynamics)	A20MAT412	IV
13	Abstract Algebra	A20MAT513	V
14	Real Analysis-I	A20MAT514	V
15	Complex Analysis I	A20MAT515	V
16	Linear Algebra	A20MAT616	VI
17	Real Analysis-II	A20MAT617	VI
18	Complex Analysis II	A20MAT618	VI

DISCIPLINE SPECIFIC ELECTIVE

S. No	DSE	CODE	SEMESTER
1	DSE I	A20MAE30X	III
2	DSE 2	A20MAE40X	IV
3	DSE 3	A20MAE50X	V
4	DSE 4	A20MAE6XX	VI

INTER DISCIPLINARY COURSE

S. No	IDC	CODE	SEMESTER
1	Physics	**A20PHT101**	I
2	Physics lab	**A20PHP101**	I
3	Chemistry	**A20CHT202**	II
4	Chemistry lab	**A20CHP202**	II
5	Statistics - I	A20MAT 319	III
6	Statistics – I Lab	A20MAP 319	III
7	Statistics - II	A20MAT420	IV
8	Statistics – II Lab	A20MAP420	IV

OPEN ELECTIVE

S. No	CODE	COURSE Title	SEMESTER
1	**A20XXT5XX**	Open Elective - I	V
2	**A20XXT6XX**	Open Elective - II	VI

SKILL ENHANCEMENT COURSE

S. No	SEC	CODE	SEMESTER
1	SEC 1(numerical Method using C)	**A20 MAS301**	III
2	SEC 2 (Quantative Aptitude & Reasoning - I)	**A20 MAS402**	IV
3	SEC 3 (Quantative Aptitude & Reasoning - II)	**A20 MAS503**	V
4	SEC 4 (Mathematical Modelling)	**A20 MAS604**	VI

EMPLOYABILITY ENHANCEMENT COURSE

S. No	EEC	CODE	SEMESTER
1	C Program	A20MAO101	I
2	JAVA	A20MAO202	II

3	PYTHON	A20MAO303	III
4	Data Structure	A20MAO404	IV
5	Computer Graphics	A20MAO505	V

ABILITY ENHANCEMENT COMPULSORY COURSE

S. No	EEC	CODE	SEMESTER
1	Value Education	A20MAA101	I
2	Environmental studies	A20MAA202	II

S.No.	DISCIPLINE SPECIFIC ELECTIVE Courses	CODE
1.	Numerical Method	A20MAE301
2.	Special Functions	A20MAE302
3.	Differential Geometry	A20MAE303
4.	Applied Regression Analysis	A20MAE404
5.	Bessel's Functions	A20MAE405
6.	Number Theory	A20MAE406
7.	Calculus of Variation	A20MAE507
8.	Machine Learning	A20MAE508
9.	Artificial Intelligence	A20MAE509
10.	Graph Theory	A20MAE610
11.	Fuzzy Algebra	A20MAE611
12.	Astronomy	A20MAE612

EEC(Employability Enhancement Course)
1. C Program
2. JAVA
3. PYTHON
4. Data Structure
5. Computer Graphics

OPEN ELECTIVES

S.No.	Course Code	Course Title	Offering Department	Permitted for the students of following departments only
1	A20MAT521	Quantitative Aptitude and Logical Reasoning	MATHS	ALL
2	A20MATX18	Operations Research	MATHS	BBA,BCA,B.SC(CS)
3	A20MAEX01	Numerical Methods	MATHS	BCA, B.SC(CS)
4	A20MAEX11	Graph Theory	MATHS	BCA, B.SC(CS)
5	A20MAEX09	Machine Learning	MATHS	ALL
6	A20MAT625	Astronomy	MATHS	ALL

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YEAR I / SEMESTER I										
				Periods				Max Marks		
Sl. NO	Course Code	Course Title	Course Category	Lecture Hours	Tutorial Hours	Lab/ Practical Hours	Credits	CAM	ESM	Total Marks
Theory										
1	A20TAT101	Language I	ML	3	0	0	3	25	75	100
2	A20ENT101	English I	Language	3	0	0	3	25	75	100
3	A20MAT101	Differential calculus	DSC	3	1	0	4	25	75	100
4	A20MAT102	Trigonometry	DSC	3	1	0	4	25	75	100
5	A20MAT103	Analytical Geometry 3D	DSC	3	1	0	4	25	75	100
6	A20PHT1XX	Physics	IDC	3	1	0	4	25	75	100
Practical										
7	A20PHP1XX	Physics lab	IDC Lab	0	0	2	2	50	50	100
Employability Enhancement Course										
8	A20MAO101	EEC1	EEC	2	0	0	2	100	0	100
Ability Enhancement Compulsory Course										
9	A20AET101	Value Education	AECC	2	0	0	0	100	0	100
Total				22	4	2	24	200	500	700

A20TAT101

தமிழ்- I

L	T	P	C	Hrs
3	0	0	3	45

பாடத்திட்டத்தின் நோக்கம்

- இரண்டாயிரம் ஆண்டுகாலத் தமிழின் தொன்மையையும் வரலாற்றையும் அதன் விழுமியங்களையும் பண்பாட்டையும் எடுத்துரைப்பதாக இப்பாடத்திட்டம் அமைக்கப் பட்டுள்ளது.
- காலந்தோறும் தமிழ் இலக்கியம் உள்ளடக்கத்திலும், வடிவத்திலும் பெற்ற மாற்றங்கள், அதன் சிந்தனைகள், அடையாளங்கள் ஆகியவற்றை காலந்தோறும் எழுதப்பட்ட இலக்கியங்களின் வழியாகக் கூறுவதாகவும், மொழியின் கட்டமைப்பைப் புரிந்து கொள்வதாகவும் பாடத்திட்டம் வடிவமைக்கப்பட்டுள்ளது.
- வாழ்வியல் சிந்தனைகள், ஒழுக்கவியல் கோட்பாடுகள், சமத்துவம், சூழலியல் எனப் பல கூறுகளை மாணவர்களுக்கு எடுத்துரைக்கும் விதத்தில் இப்பாடத்திட்டம் உருவாக்கப்பட்டுள்ளது.

அலகு – 1

இக்காலக் கவிதைகள் - 1

1. பாரதியார் – கண்ணன் என் சேவகன்
2. பாரதிதாசன் – தமிழ்ப்பேறு
3. அப்துல் ரகுமான் – அவதாரம்
4. மீரா – கனவுகள் +கற்பனைகள் = காகிதங்கள்
5. து. நரசிம்மன் – மன்னித்துவிடு மகனே

அலகு – 2

இக்காலக் கவிதைகள் - 2

1. ராஜா சந்திரசேகர் – கைவிடப்பட்ட குழந்தை
2. அனார் – மேலும் சில இரத்தக் குறிப்புகள்
3. சுகிர்தராணி – அம்மா
4. நா.முத்துக்குமார் – தூர்

அலகு – 3

சிற்றிலக்கியம்

1. கலிங்கத்துப் பரணி – பொருதடக்கை வாள் எங்கே... (பாடல் - 485)
2. அழகர்கிள்ளை விடு தூது – இதமாய் மனிதருடனே... (கண்ணி – 45)
3. நந்திக் கலம்பகம் – அம்பொன்று வில்லொடிதல்... (பாடல் – 77)
4. முக்கூடற் பள்ளு – பாயும் மருதஞ் செழிக்கவே... (பாடல் – 47)
5. குற்றாலக் குறவஞ்சி – ஓடக் காண்பதுமே... (பாடல் - 9)

காப்பியங்கள்

மணிமேகலை – உலகவறவி புக்க காதை – "மாசுஇல் வால்ஒளி! - இந்நாள் போலும் இளங்கொடி கெடுத்தனை" . (28 அடிகள்)

அலகு – 4 – தமிழ் இலக்கிய வரலாறு

1) சிற்றிலக்கியம் - தோற்றமும் வளர்ச்சியும், 2) புதுக்கவிதை - தோற்றமும் வளர்ச்சியும், 3) சிறுகதை - தோற்றமும் வளர்ச்சியும், 4) புதினம் - தோற்றமும் வளர்ச்சியும், 5) உரைநடை - தோற்றமும் வளர்ச்சியும்

அலகு -5

மொழிப்பயிற்சி :

1. கலைச்சொல்லாக்கம், 2. அகரவரிசைப்படுத்துதல், 3. மரபுத்தொடர் / பழமொழி, 4. கலை விமர்சனம், 5. நேர்காணல்

உரைநடைப் பகுதி :

1. உ.வே.சாமிநாதையர் – சிவதருமோத்திரச் சுவடி பெற்ற வரலாறு,
2. தஞ்சாவூர்க் கவிராயர் –கூஜாவின் கோபம்,
3. இரா.பச்சியப்பன் – மாடல்ல மற்றையவை

பார்வை நூல்கள்

1. *கைலாபதி. க., தமிழ் நாவல் இலக்கியம் ,குமரன் பதிப்பகம், வடபழனி. 1968.*
2. *சுந்தரராஜன், பெ. கோ., சிவபாதசுந்தாம், சோ., தமிழில் சிறுகதை வரலாறும் வளர்ச்சியும், க்ரியா, சென்னை, 1989.*
3. *பரந்தாமனார், அ.கி., நல்ல தமிழ் எழுத வேண்டுமா, பாரி நிலையம், சென்னை, 1998,*
4. *பாக்யமேரி, வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு, என்.சி.பி. எச். பதிப்பகம், சென்னை, 2011*

வல்லிக்கண்ணன், புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும், அன்னம், சிவகங்கை, 1992.

A20MAT101	DIFFERENTIAL CALCULUS	L	T	P	C	Hrs
		3	1	0	4	45

Course Objectives

- To learn nth derivative of product of two functions and understand the concept of homogeneous functions
- To make the knowledge about Tangents and normal
- To introduce the concept of Maxima and minima of function of two and three variables.
- To understand the angle between the curves.
- To introduce the notion of curvatures, Evolutes & Involutes and polar co-ordinates.

Course Outcomes

After completion of the course, the students will be able to

CO 1 – Knowing the basics of differential calculus
CO 2 – Understand the tangent and normal with examples
CO 3 – Find maxima and minima for the functions
CO 4 – Solve the angle between the curves
CO 5 – Sketch curves in Cartesian and polar coordinate systems

UNIT I **(9 Hrs)**

Definition of a derivative – differentiation techniques – Differentiation of Implicit functions – n^{th} derivative – Leibnitz formula for the n^{th} derivative and applications – Jacobians

UNIT II **(9 Hrs)**

Total differential coefficients – Homogeneous functions and Euler's theorem –Partial differentiation –Functions of two and three variables -- Equations of tangent and normal – Taylor's theorem

UNIT III **(9 Hrs)**

Maxima and Minima of two variables – Method of Lagrange's method of undetermined multipliers–Angle of intersection of curves –Sub tangent and Sub Normal.

UNIT IV **(9 Hrs)**

Angle between the radius vector and tangent – Angle between the intersection of two curves –Polar sub tangent and subnormal.

UNIT V **(9 Hrs)**

Curvature – Radius of curvature in Cartesian and in Polar Coordinates – Centre of curvature –Evolutes & Involutes

Text Books

1. T.K.Manicavachagom Pillai Calculus Volume – I Printers and Publishers(May 1992 Edition)
2. S.Narayanan and T.K. Manicavachagom Pillai ,Calculus, Volume I, S.Viswanathan (Printers Publishers) Pvt Limited, Chennai– 2011.
3. P.Kandasamy, K.Thilagavathy [2004], "Mathematics for B.Sc", Vol-I &II , S.Chand & Company Ltd., New Delhi-55.

Reference Books

1. S.Arumugam and Isaac,Calculus, Volume1,New GammaPublishing House,1991.
2. P.Kandasamy,K.Thilagavathy(2004),MathematicforB.Sc.Vol.-I,II,III&IV,S.Chand&CompanyLtd.,NewDelhi-55.
3. Shanti Narayan [2001], "Differential Calculus",Shyamlal Charitable Trust,
4. New Delhi G.B.Thomas and R.L.Finney[1998], "Calculus and Analytic Geometry", Addison Wesley [9th Ed], Mass.[Indian Print].
5. P.R.Vittal [2004], "Calculus", Margham Publication, Chennai

Web References

1. https://youtu.be/Cn54abNI2TI
2. https://youtu.be/Em5EUstK8Rw
3. https://www.sakshieducation.com/Engg/EnggAcademia/CommonSubjects/M1-CurvatureEvolutes&EnvelopesCurveTracing.pdf
4. https://en.wikisource.org/wiki/Elements_of_the_Differential_and_Integral_Calculus/Chapter_VI_part_2
5. http://orca.phys.uvic.ca/~tatum/thermod/thermod02.pdf

A20ENT101	ENGLISH - I	L	T	P	C	Hrs
		3	0	0	3	45

Course Objectives

- To recognize the rhythms, metrics and other musical aspects of poetry
- To read a variety of texts critically and proficiently
- To enable the students to enjoy the flair of literature through the work of great writer
- To make the students to know the functions of basic grammar and frame sentences without grammatical error.
- To enable them understanding the intrinsic nuances of writing in English language

Course Outcomes

After completion of the course, the students will be able to

CO1 - Comprehend and discuss the various facets of selected poems
CO2 - Analyze and interpret texts written in English
CO3 - Read drama with graduate-level interpretive and analytical proficiency
CO4 - Improve the fluency and formation of grammatically correct sentences
CO5 - Enhance the writing skills for specific purposes

UNIT I: POETRY **(9 Hrs)**

1. John Milton: On His Blindness
2. William Wordsworth: Daffodils
3. Percy Byshe Shelley: Ozymandias
4. Emily Dickinson: Because I could not stop for Death
5. Sarojini Naidu: The Queen's Rival

UNIT II: PROSE **(9 Hrs)**

1. Francis Bacon: Of Love
2. Charles Lamb: A Dissertation upon Roast Pig
3. Katherine Mansfield: A Doll's House
4. R. K. Narayan: An Astrologer's Day
5. Abdul Kalam: The Power of Prayer

UNIT III: DRAMA **(9 Hrs)**

1. Oscar Wilde: *Lady Windermere's Fan*

UNIT IV: GRAMMAR **(9 Hrs)**

1. Parts of Speech
2. Tenses
3. Subject-Verb Agreement

UNIT V: COMPOSITION **(9 Hrs)**

1. Essay Writing
2. Email

Text Books

1. Brookside Musings: A Selection of Poems and Short Stories: Board of Editors, Orient Longman Limited, 2009
2. Wilde, Oscar. Lady Windermere's Fan.published in The Importance of Being Earnest and Other Plays. London: Penguin, 1940. ISBN 0-14-048209-1.
3. Wilde, Oscar. Lady Windermere's Fan. London: Nick Hern Books, 2005. ISBN 978-1-85459-771-7
4. Lamb,Charles, A Dissertation Upon Roast Pig & Other Essays, Penguin; UK ed. edition (7 April 2011)
5. Gale, Emily Dickinson's Because I could not stop for Death, Cengage Learning, 2015

Reference Books

1. LalithaNatarajan&SasikalaNatesanEnglish for Excellence: Poetry Anuradha Publications
2. Literary Pursuits: Board of Editors, Orient Longman Limited, 2015
3. Literary Pinnacles: An Anthology of Prose and Poetry. Board of Editors, Orient LongmanLimited, 2015
4. The Approach to Life: A Selection of English Prose: Orient Longman Limited, 2009
5. JeetThayil, 60 Indian Poets, Penguin Books, 2008

Web References

1. https://poets.org/poem/because-i-could-not-stop-death-479
2. https://www.enotes.com/topics/an-astrologers-day
3. https://www.poetryfoundation.org/poems/46565/ozymandias
4. https://www.dltk-holidays.com/spring/poem/daffodils.htm

A20MAT102	TRIGONOMETRY	L	T	P	C	Hrs
		3	1	0	4	45

Course Objectives

- To familiarize the student about the Expansions of trigonometric functions their Applications.
- The learner will become proficient in various types of hyperbolic functions
- To study the basic concept Hyperbolic Functions .
- To learn the DeMoire's Property and logarithm .
- To familiarize the concept of series in trigonometric functions.

Course Outcomes

After completion of the course, the students will be able to

CO 1 – To expand Trigonometrical functions.
CO 2 – Apply the Basic rules of Expansions of power series.
CO 3 – Understand the basic concepts HyperbolicFunctions
CO 4 – Solve the problems by using DeMoivre's Property.
CO 5 – Understand various methods for the summation of infinite trigonometric series

UNIT I **(9 Hrs)**

Expansions of cosnθ, sinnθ – Expansion of tannθ in terms of tanθ – Expansion of tan(A+B+C+...) –Formation of Equations.

UNIT II **(9 Hrs)**

Powers of sine's and cosines of θ in terms of functions of multiples of θ – expansions of sin θ and cos θ in a series of ascending powers of θ – Expansion of Inverse Circular Functions.

UNIT III **(9 Hrs)**

Definition – Relation between Hyperbolic Functions – Inverse Hyperbolic Functions.

UNIT IV **(9 Hrs)**

Resolution into Factors –simple problems only – DeMoivre's Property on the Circle and Cote's Property on the Circle – Logarithm of complex quantities.

UNIT V **(9 Hrs)**

Summation of Trigonometric Series: Method of Differences – Gregory Series – Euler Series.

Text Book

1. S.Narayanan and T.K.Manicavachagom Pillai (2004) *Trigonometry.* S.Viswanathan Printers & Publishers. Pvt. Ltd. Chennai.
2. P.Kandasamy, K.Thilagavathy (2004), Mathematic for B.Sc. Vol.-I, II, III & IV, S.Chand & Company Ltd., New Delhi-55.
3. N.P.Bali – TRIGONOMETRY– Year of Publication 1994.Krishna Prakasan Mandhir, 9, Shivaji Road, Meerut (UP).

ReferenceBooks

1. S.L.Loney. (1982) Plane Trigonometry, Part II, Cambridge University Press, London..
2. S.DuraipandianandLaxmiDuraipandian,*Trigonometry*.EmeraldPublishers,Chennai – 1984.
3. B.S.Grewal *Higher Engineering Mathematics.* Khanna Publishers, New Delhi - 2002.
4. A.Singaravelu, *Algebra and Trigonometry*, Vol.-I Meenakshi Agency, Chennai – 2003.
5. P.R.Vittal, *Trigonometry*, Margham Publications , Chennai – 2004.

Web References

1. http://web.mit.edu/jorloff/www/18.01a-esg/OCWTrig.pdf
2. https://faculty.atu.edu/mfinan/trigbook.pdf
3. https://users.auth.gr/~siskakis/GelfandSaul-Trigonometry.pdf
4. https://www.youtube.com/watch?v=Q9p40gxruYY
5. https://www.youtube.com/watch?v=c4By5M04foc

		L	T	P	C	Hrs
A20MAT103	**ANALYTICAL GEOMETRY**	**3**	**1**	**0**	**4**	**45**

Course Objectives

- To learn about analytical geometry in two dimension
- To acquire knowledge of planes and its properties as a 3 dimensional objects
- To understand the concepts skew lines ad spheres.
- Solving problems related to geometry of three dimension
- Be familiar with conicoids

Course Outcomes

After completion of the course, the students will be able to

CO 1 – Getting a good foundation of sketch conic sections.
CO 2 – Study more about straight lines using coplanar and shortest distance between the lines
CO 3 – Analyze the concepts associated with spheres and solve problems using sphere
CO 4 – Analyze more about three dimensions using cone and cylinder
CO 5 – Familiarize the congruent conics.

UNIT I TWO DIMENSION **(9 Hrs)**

Analytical geometry of 2D-polar coordinates equation of a conic – directrix – chord – tangent –normal – simple problems – only in deriving equation of a conic.

UNIT II THREE DIMENSION **(9 Hrs)**

Analytical Geometry 3D – straight lines – coplanarity of straight line – shortest distance (S.D) and equation of S.D between two lines – simple problems.

UNIT III SPHERE **(9 Hrs)**

Sphere: standard equation of sphere – results based on the properties of a sphere – tangent plane to a sphere – equation of a circle.

UNIT IV CONE AND CYCLINDER **(9 Hrs)**

Cone and cylinder: Cone whose vertex is at the origin- envelope cone of a sphere-right circular cone-equation of a cylinder-right circular cylinder.

UNIT VCONICOIDES **(9 Hrs)**

Nature of a conicoide – standard equation of central conicoide –enveloping cone- tangent plane-condition for tangency –director Sphere – director plane.

Test Book

1. P. DuraiPandian&others , "Analytical Geometry",United kingdom Publication,1968
2. N.P. Bali, " Solid Geometry" Laxmi Publications (P)Ltd, 2015
3. Thomas Grenfell Vivian, *"Analytical Geometry for Beginners: Part I. the Straight Line and Circle"* (2010 – Nabu Press)
4. T.K.Manicavachagom Pillay & T. Natrajan (2011), "Analytical Geometry, part II-Three dimensions", S.Viswanathan Printers & Publishers Pvt.Ltd. Chennai.

Reference Books

1. T.K. M. Pillai& Others, "Analytical Geometry of 2D" Visvanathan Publications- 2006
2. M.L. Khanna, "Solid Geometry"Jainath& Co Publishers,Meerut, 2015
3. Louis Leithold and Leithold , "Calculus and Analytical Geometry" [Sixth Edition] (HarperCollins Colelge Division),2000.
4. D. Chatterjee, "*Analytical Geometry: Two and Three Dimensions*" (2009 – Alpha Science International Limited)
5. P.K. Mittal and Shanti Narayan , "*Analytical Solid Geometry*" (2005 – International Book Distributing Company)

Web References

1. https://www.coursera.org/lecture/fe-exam/analytic-geometry-and-trigonometry-straight-lines-SV8UL
2. https://www.askiitians.com/iit-jee-3d-geometry/
3. http://paulbourke.net/geometry/circlesphere/
4. http://www.mndcollegerajur.org/uploads/department/cone.pdf

Sub. Code	Ancillary Physics Practical – I	L	T	P	C	Total
A20PHP101		0	0	3	2	100

List of Experiments

1. Semi conductor diode characteristics.
2. Surface tension – Drop weight method.
3. Meter Bridge – Determination of resistance.
4. Post office Box – Resistance.
5. Non uniform Bending – Young's modulus
6. Potentiometer – Voltmeter Calibration.
7. Sonometer – Verification of Laws.
8. Spectrometer – Determination of refractive index.
9. Bridge rectifier.
10. Basic logic gates –Discrete components.

Sub. Code	Ancillary Physics – I	L	T	P	C	Total
A20PHT101		6	0	0	6	100

(For B.Sc., Mathematics & B.Sc., Applied Chemistry)

Aim:

The course presents an introduction to the physics of the objects whose sizes span from atomic dimensions to macroscopic, human scale dimensions, and beyond: atoms, molecules, gases, liquids, and solids. The aim is to show how the properties of macroscopic bodies can be derived from the knowledge that matter is made up from atoms.

Objective:

Recognize the difference between physical and chemical properties
Distinguish between extensive and intensive properties

Learning outcomes:

On completion successful students will be able to demonstrate an understanding of:
1. The relationships between physics on the atomic scale and the properties of matter.
2. The roles played by microscopic states of system, their numbers and their accessibility.
3. Techniques for finding appropriate averages to predict macroscopic behavior.
4. How these techniques are applied to the calculation of the properties of matter.

Unit I: Mechanics

Center of gravity of a solid hemisphere – Hollow hemisphere – solid cone. Stability of floating bodies – Meta center – Determination of Meta centric height of a ship.

Unit II: Sound

Simple harmonic motion – composition of two simple harmonic motion – along a straight line – At right angle to each other LissaJou's figures and their application – Acoustics of buildings reverberation – reverberation time Sabine's formula – conditions for good acoustics. Decibel – phonon – Intensity measurements by hotwire microscope method.

Unit III: Properties of matter

Diffusion: Fick's law – Coefficients of diffusion – experimental determination of coefficient of diffusion – application.
Osmosis: Laws of osmotic pressure Berkeley and Hartley method of determining osmotic pressure – elimination of boiling point and depression of freezing point – application.

Unit IV: Thermal physics

Newton's law of cooling –verification – specific heat capacity of liquid by cooling – bomb calorie meter.
Conduction: Coefficient of thermal conductivity –good and bad conductor – Stefan's law of radiation – solar constant – Angstrom's phyro heliometer – temperature of the sun.

Unit V: Optics

Electro magnetic spectrum – spectral responds of human eye – UV and IR spectroscopy – Raman Effect – Experimental arrangement – application of Raman effect.
Fiber optic communication: Introduction – optic fiber – numerical aperture – coherent bundle – fiber optic communication system and its advantage – multimode fiber optic sensors.

Books for reference:

1. Sound, Saigal, SChand & Co
2. Mechanics, D.S. Mathur.
3. Properties of Matter – Brijlal Subramaniyam
4. Heat and thermodynamics, Brijlal Subramaniyam
5. Optics, Brijlal Subramaniyam.
6. Static, Hydrostatics and Hydrodynamics, Narayanamoorthy & Nagarathinam.

A20AET101	VALUE EDUCATION	L	T	P	C	Hrs
	(For all UG Degree Courses)	2	0	0	2	45

UNIT I

Value Education – Definition – relevance to present day – Concept of Human Values – self introspection – Self esteem. **(9 Hrs)**

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. **(9 Hrs)**

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. **(9 Hrs)**

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. **(9 Hrs)**

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. **(9 Hrs)**

Reference Books

1. T. Anchukandam and J. Kuttainimathathil (Ed) Grow Free Live Free, KrisituJyoti 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.Mascaronhas Centre for Research Education Science and Training for Family Life Promotion - Family Life Education, Bangalore, 1993

Web References

1. www.rkmissiondhe/.org/education.html/
2. www.clallam:;org/lifestyle/education.html/
3. www.sun.com/../edu/progrmws/star.html/
4. www.infoscouts.com
5. www.secretofsuccess.com
6. www.1millionpapers.com
7. http://militarlyfinance.umuc.edu/education/edu-network.html/

A20MAO101	PROGRAMMING IN C	L	T	P	C	Hrs
		2	0	0	2	45

Course Objectives:

- To enhance the Concept of C program,
- To Learn theoperators and statements of c language
- To acquire skills to evaluate the decision making statements and to solve the problems based on it.
- To study the difference between while and do statement
- To familiarize arrays,functions and solve the problems regarding about it.

Course Outcomes:

After completion of the course, the students will be able to

CO 1 – Enable the students to learn about the basic structure of C program
CO 2– Understand about various operators
CO 3–familiarize the input and output conditions
CO 4– Know about while Statement
CO 5 –.Understand about arrays

UNIT I **(9 Hrs)**

Introduction – Importance of C Basic structure of C programme – Character set –Constants – Keywords and identifiers – Variables Data types – Declaration of variables –Assigning values to variables –Defining symbolic constants.

UNIT II **(9 Hrs)**

Arithmetic operators – Relational operators – logical operators – assignmentoperators – increment and decrement operates –Conditional operators – Special operators –Arithmetic expressions –Evaluation of expressions –Precedence of arithmetic operators – Somecomputational problems –Type conversion in expressions – operator precedence and associatingmathematical functions.

UNIT III **(9 Hrs)**

Reading and Writing character – formatted input and output – Decision making withIF statement – Simple IF statement – The if ELSE statement - Nesting of IF.....ELSE statement– The ELSE IF ladder. The Switch statement – The ? Operator –The GOTO statement.

UNIT IV **(9 Hrs)**

The WHILE statement – the DO statement the FOR statement – Jumps in loops.

UNIT V **(9 Hrs)**

One, Two dimensional arrays – Initiating two dimensional arrays – Multidimensionalarrays –Declaring and initializing string variables –reading strings from terminal – Writingstrings on the screen – Arithmetic operations on characters.

Text Book

1. E.Balagurusamy, "Programming in ANSI C" Second Edition – Tata McGraw –Hill Publishingcompany limited, New Delhi.
2. Kris A.Jamsa, "PROGRAMMING IN C" ,Galgotia Publications Pvt.ltd - 1992.
3. Data Structures, Seymour Lipschutz, G.A.Vijayalakshmi Pai, Second Edition , Schaum's Outlines, Tata Mc-Graw Hill Private Ltd., 2006

Reference Books

1. Byron Gottfried "Programming with C"(Schaum's outline series) – Tata McGrawHillPublishingcompany -1998.
2. Ashok N.Kamthane "Programming with Ansi and Turbo C", Pearson Education publishers,2002
3. HentryMullish and Herbert L cooper , "The spirit of C" Jaico publisher , 1996.
4. Brian w.kernighan, dennis m.ritchie "THE ANSI C" second edition , Published by Prentice- Hall of India Privated Limited, M-97,New Delhi- 110001 - October 1992.
5. C.Balasubramanian "ANSI C" With Microsoft C 5.1 and Quick C 2.0.Tata McGraw–HillPublishing company limited, New Delhi1992.

Web References

1. https://www.programiz.com/c-programming/c-variables-constants
2. https://faculty.psau.edu.sa/filedownload/doc-13-pdf-b790198028e7b75cde4173bc1c825c64-original.pdf
3. https://www.cpp.edu/~elab/ECE114/Break%20Statement%20&%20Do%20While%20Loop.html
4. https://www.studytonight.com/c/decision-making-in-c.php
5. http://www.griet.ac.in/nodes/UNIT-III(QA)_cp.pdf

	YEAR I / SEMESTER II									
				Periods				Max Marks		
SI. NO	Course Code	Course Title	Course Category	Lecture Hours	Tutorial Hours	Lab/ Practical Hours	Credits	CAM	ESM	Total Marks
Theory										
1	A20TAT202	Language II	**ML**	3	0	0	3	25	75	100
2	**A20ENT2XX**	English II	**Language**	3	0	0	3	25	75	100
3	A20MAT204	Sequence and Series	**DSC 4**	3	1	0	4	25	75	100
4	A20MAT205	Ordinary Differential Equation	**DSC 5**	3	1	0	4	25	75	100
5	A20MAT206	Integral Calculus	**DSC 6**	3	1	0	4	25	75	100
6	**A20CHT2XX**	Chemistry	**IDC2**	3	1	0	4	25	75	100
Practical										
7	A20CHP2XX	Chemistry lab	**IDC2 Lab**	0	0	2	2	50	50	100
Employability Enhancement Course										
8	A20MAO202	EEC2	**EEC**	2	0	0	2	100	0	100
Ability Enhancement Compulsory Course										
9	A20AET202	Environmental studies	**AECC**	2	0	0	0	100	0	100
Extension Activity										
10	-	Yoga/NSS/NCC/Physical	EXTENSION	0	0	1	1	50	0	50
	Total			**22**	**4**	**3**	**24**	**200**	**500**	**700**

A20TA202	தமிழ்- II	L	T	P	C	Hrs
		3	0	0	3	45

பாடத்திட்டத்தின் நோக்கம்

- இரண்டாயிரம் ஆண்டுகாலத் தமிழின் தொன்மையையும் வரலாற்றையும் அதன் விழுமியங்களையும் பண்பாட்டையும் எடுத்துரைப்பதாக இப்பாடத்திட்டம் அமைக்கப் பட்டுள்ளது.
- காலந்தோறும் தமிழ் இலக்கியம் உள்ளடக்கத்திலும், வடிவத்திலும் பெற்ற மாற்றங்கள், அதன் சிந்தனைகள், அடையாளங்கள் ஆகியவற்றை காலந்தோறும் எழுதப்பட்ட இலக்கியங்களின் வழியாகக் கூறுவதாகவும், மொழியின் கட்டமைப்பைப் புரிந்து கொள்வதாகவும் பாடத்திட்டம் வடிவமைக்கப்பட்டுள்ளது.
- வாழ்வியல் சிந்தனைகள், ஒழுக்கவியல் கோட்பாடுகள், சமத்துவம், சூழலியல் எனப் பல கூறுகளை மாணவர்களுக்கு எடுத்துரைக்கும் விதத்தில் இப்பாடத்திட்டம் உருவாக்கப்பட்டுள்ளது.

அலகு – 1

1. எட்டுத்தொகை : 1. குறுந்தொகை (பாடல் – 130), 2. நற்றிணை (பாடல் - 27), 3. அகநானூறு (பாடல் – 88)
2. பத்துப்பாட்டு - சிறுபாணாற்றுப்படை (அடிகள் - 126-143)
3. பதினென் கீழ்க்கணக்கு : திருக்குறள் - வெகுளாமை (அதிகாரம்31), காதல் சிறப்புரைத்தல் (அதிகாரம் 113)

அலகு – 2

1. எட்டுத்தொகை : 1. ஐங்குறுநூறு (பாடல் - 203), 2. கலித்தொகை - பாலைத்திணை (பாடல் - 9), 3. புறநானூறு (பாடல் - 235)
2. பத்துப்பாட்டு - முல்லைப்பாட்டு (அடிகள் - 6 – 21)
3. பதினென் கீழ்க்கணக்கு - 1. நாலடியார் - நல்லார் எனத்தாள் (221), 2. திரிகடுகம் - கோலஞ்சி வரழும் குடியும் (33), இனியவை நாற்பது - குழவி தளர்நடை (14), கார் நாற்பது - நலமிகு கார்த்திகை (26), 5. களவழி நாற்பது - கவளங்கொள் யானை (14)

அலகு - 3

சைவம் – பன்னிரு திருமுறைகள்

1. திருஞானசம்பந்தர் - வேயுறு தோளிபங்கன் (இரண்டாம் திருமுறை)
2. திருநாவுக்கரசர் - மனமெனும் தோணி (நான்காம் திருமுறை)
3. சுந்தரர் - ஏழிசையாய் இசைப்பயனாய் (ஏழாம் திருமுறை)
4. மாணிக்கவாசகர் - ஆதியும் அந்தமும் இல்லா (திருவெம்பாவை)
5. திருமூலர் - அன்பு சிவம் இரண்டு (திருமந்திரம்)

வைணவம் – நாலாயிரத் திவ்யப் பிரபந்தம்

1. பேயாழ்வார் - திருக்கண்டேன் பொன்மேனி ...
2. பெரியாழ்வார் - கருங்கண் தோகை மயிற் பீலி...
3. தொண்டரடிப்பொடி ஆழ்வார் - பச்சைமாமலை போல்...
4. ஆண்டாள் - கருப்பூரம் நாறுமோ? கமலப்பூ ...
5. திருமங்கையாழ்வார் - வாடினேன் வாடி வருந்தினேன்

இஸ்லாமியம்
சீறாப்புராணம் - படலம் நின்ற பிணை மானுக்குப் -- 5 பாடல்கள் (பாடல் எண்கள் : 61 - 65)
கிறித்துவம்

இரட்சண்ய யாத்ரீகம் – கடைதிறப்புப் படலம் – 5 பாடல்கள் (பாடல் எண்கள் : 3,9,10,15,16)

அலகு – 4
தமிழ் இலக்கிய வரலாறு
1. சங்க இலக்கியங்கள், 2. நீதி இலக்கியங்கள், 3.பக்தி இலக்கியங்கள், 4. காப்பியங்கள்

அலகு – 5
சிறுகதைகள்

1. புதுமைப்பித்தன் – அகலிகை
2. ந.பிச்சமூர்த்தி – வேப்பமரம்
3. அகிலன் – ஒரு வேளைச் சோறு
4. ஜி. நாகராஜன் – பச்சக் குதிரை
5. கி.ராஜநாராயணன் – கதவு
6. சர.கந்தசாமி – தக்கையின் மீது நான்கு கண்கள்
7. ஆண்டாள் பிரியதர்ஷினி – மாத்திரை
8. வண்ணதாசன் – ஒரு உல்லாசப் பயணம்
9. சு. தமிழ்ச்செல்வன் – வெயிலோடு போய்
10. பாரததேவி – மாப்பிள்ளை விருந்து

பார்வை நூல்கள்

1. *அரசு, வீ., இருபதாம் நூற்றாண்டுச் சிறுகதைகள் நாறு, அடையாளம் பதிப்பகம், திருச்சி, 2013*
2. *அருணாசலம், ப., பக்தி இலக்கியங்கள், பாரி நிலையம், சென்னை, 2010*
3. *தமிழண்ணல், புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு, மீனாட்சி புத்தக நிலையம், மதுரை, 2000*
4. *பாக்யமேரி, வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு, என்.கி.பி. எச். பதிப்பகம், சென்னை, 2011*

பசுபதி, ம. வே. செம்மொழித்தமிழ் இலக்கண இலக்கியங்கள், த□□□□ப் பல்கலைக்கழகம், தஞ்சாவூர், 2010.

A20EN202	ENGLISH - II	L	T	P	C	Hrs
		3	0	0	3	45

Course Objectives

- To recognize poetry from a variety of cultures, languages and historic periods
- To develop the intensive study of language by critical reading
- To identify the various genres and analyze the works of writers inEnglish
- To expand the basic understanding of targeted grammatical structures
- To understand the conventions of writing in English

Course Outcomes

After completion of the course, the students will be able to

CO1 - Understand and appreciate poetry as a literary art form
CO2 - Comprehend and recognize relationship between ideas, events and facts
CO3 - Learn to explore characters and their conflicts, dilemmas and extend their response to stories
CO4 - Apply grammatical structures meaningfully and appropriately in oral and written form
CO5 - Write effectively and coherently

UNIT I POETRY **(9 Hrs)**

1. John Donne: The Flea
2. Lord Byron: She Walks in Beauty
3. Robert Frost: Stopping by Woods on a Snowy Evening
4. Rabindranath Tagore: Where the Mind is Without Fear
5. Nissim Ezekiel: Night of the Scorpion

UNIT II: PROSE **(9 Hrs)**

1. A.G. Gardiner: All about a Dog
2. Ernest Hemingway: A Day's Wait
3. Anton Chekhov: The Lottery Ticket
4. Swami Vivekananda: Chicago Address 1893
5. Ruskin Bond: The Thief

UNIT III: FICTION **(9 Hrs)**

1. Jane Austen: *Pride and Prejudice*

UNIT IV: GRAMMAR **(9 Hrs)**

1. Voice
2. Conditionals
3. Intensifiers
4. Coherence

UNIT V: COMPOSITION **(9 Hrs)**

1. Letter Writing
2. Report Writing

Text Books

1. Wisdom and Experience: An Anthology for Degree Classes. Board of Editors, Orient Longman Limited, 2007
2. The Approach to Life: A Selection of English Prose: Orient Longman Limited, 2009
3. Brookside Musings: A Selection of Poems and Short Stories: Board of Editors, Orient, Longman Limited, 2009

Reference Books

1. LalithaNatarajan&SasikalaNatesanEnglish for Excellence: Poetry Anuradha Publications
   Literary Pursuits: Board of Editors, Orient Longman Limited, 2015
2. Literary Pinnacles: An Anthology of Prose and Poetry. Board of Editors, Orient Longman, Limited, 2015
3. Raymond Murphy and SuraiPongtongcharoen, English Grammar in Use, Cambridge University, 1985

Web References

1. https://poets.org/poem/she-walks-beauty
2. https://www.poetryfoundation.org/poems/46467/the-flea
3. https://www.classicshorts.com/stories/lottery.html
4. http://short-storylovers.blogspot.com/2012/07/thief-by-ruskin-bond.html
5. http://www.gutenberg.org/files/1342/1342-h/1342-h.htm

A20MAT204	SEQUENCE AND SERIES	L	T	P	C	Hrs
		3	1	0	4	45

Course Objectives

- To learn a good foundation for classical analysis
- To study the behavior of sequences and series.
- To learn Common difference of an arithmetic sequence.
- To study comparison test and test of convergent
- To study the behavior of Cauchy integral test.

Course Outcomes

After completion of the course, the students will be able to

CO 1 - Getting a good foundation for classical analysis.
CO 2 - Understanding the behavior of monotonic functions.
CO 3 - Knowing limits and Cauchy sequences.
CO 4 - Studying the behavior of convergence of series by using tests.
CO 5 - Solving the problems related to sequence and series.

Unit I **(9 Hrs)**

Sequences –Bounded sequences – Monotonic sequences – Convergent sequences – Divergent sequences – Oscillating sequences.

Unit II **(9 Hrs)**

Algebra of limits – Behavior of Monotonic functions – Logarithmic test – Leibnitz's test

Unit III **(9 Hrs)**

Some theorems on limits – Sub sequences – limit points: Cauchy sequences.

Unit IV **(9 Hrs)**

Series – Infinite series – Cauchy's general principle of convergence – Comparison test theorem and test of convergence using comparison test.

Unit V **(9 Hrs)**

Test of convergence using D'Alebert's ratio test – Cauchy's root test - Cauchy Integral test – Alternating series – Absolute convergence.

Text Books

1. S.Arumugam, A.Thangapandi and Isaac, "Sequences and Series", New Gamma Publishing house, 2015.
2. EllinaGrigorieva, "Methods of solving sequence and series Problems", Birkhauser 2016.
3. Charles H.C.Little, KeeL.Teo, Bruce van Brunt, "Real Analysis via Sequence and series", Springer 2015.

Reference Books

1. KonradKnopp, "Infinite Sequences and Series", Dover Publications, 2012.
2. S.C. Malik, SavitaArora, "Mathematical Analysis" (4th edition) New age International Publishers 1992.
3. P. Siva Ramakrishna Das, E. Rukmangadachari," Engineering Mathematics" Pearson India Education Services Pvt. Ltd. 2016.
4. M.K. Singal& Asha Rani Singal, A first course in Real Analysis, R. Chand & Co. 1999.
5. Dr.S. Arumugam, Sequences & Series, New Gamma Publishers, 1999.

Web References

1. https://www.youtube.com/watch?v=tHy3TXmZpF0
2. http://sakshieducation.com/Engg/EnggAcademia/CommonSubjects/MathematicsUnit-I.pdf
3. http://homepages.math.uic.edu/~saunders/MATH313/INRA/INRA_Chapter2.pdf
4. https://www.youtube.com/watch?v=fVTi6bOvh2A
5. http://www.math.drexel.edu/~tolya/123_leibniz.pdf

A20MAT205	ORDINARY DIFFERENTIAL EQUATION	L	T	P	C	Hrs
		3	1	0	4	45

Course Objectives

- Identify an ordinary differential equation and its order
- Classify ordinary differential equations into linear and nonlinear equations
- To find solutions of exact equations
- To Know about the particular integral
- Use the method of variation of parameters to find particular solutions of second order, linear homogeneous equations

Course Outcomes

After completion of the course, the students will be able to

CO1– Understand the order, degree of differential equation
CO2– know the equation reducible to exact
CO3– learn detailed about trajectories
CO4– solve the Homogeneous equations
CO5– solve the ordinary differential equations

UNIT I **(9 Hrs)**

Differential Equation, Order and Degree of a Differential equation – Formation of a differential equation – Wronskian – definition - linearly dependent and independent set of functions.

UNIT II **(9 Hrs)**

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).

UNIT III **(9 Hrs)**

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.

UNIT IV **(9 Hrs)**

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 - Solving Homogeneous linear equations (Cauchy- Euler Equations).

UNIT V **(9 Hrs)**

Equation reducible to Homogeneous linear form (Legendre's linear equations) - Method of variation of parameters – Solving ordinary simultaneous differential equation with constant coefficients.

Text Books

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

Reference Books

1. Differential Equations and its Applications by S. Narayanan&T.K. ManickavachagomPillay, Viswanathan (Printers& Publishers) Pvt. Ltd., 2015.
2. Differential Equations and its Applications by Dr. Arumugam and Mr. A. ThangapandiIssac, New Gamma Publishing House, Palayamkottai, Edition, 2014.
3. P. Haitman: Ordinary Differential Equations, Wiley, New York, 1964
4. E. A. Coddington and H. Davinson: Theory of Ordinary Differential Equations, McGraw Hill, NY, 1955. 5. S. L. Ross: Differential Equations, Blaisdell Publishing Company, London, 1964
5. Ross, Shepley L., Introduction to Ordinary Differential Equations, fourth edition, John Wiley & Sons, Inc., New York, 1989.

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
4.http://home.iitk.ac.in/~sghorai/TEACHING/MTH203/ode4.pdf

A20MAT206	INTEGRAL CALCULUS	L	T	P	C	Hrs
		3	1	0	4	45

Course Objectives

- To introduce Rational and Irrational Functions
- To know about definite integrals
- To learn about some reduction formula
- To know about difference between Area and Volume Integral
- To introduce Beta and Gama Functions

Course Outcomes

After completion of the course, the students will be able to

CO1–Understand various integration functions.
CO2–Knowledge pertaining tovarious techniques of solving Integration.
CO3–Improves their ability to different types of Reduction formulae.
CO4– Solve Double and triple Integrals.
CO5–Understand the Relation between Beta and Gamma Functions

UNIT I **(9 Hrs)**

Revision of all Integral Models including Integration of Rational and Irrational Functions.

UNIT II **(9 Hrs)**

Properties of Definite Integrals – Integration by parts - Bernoulli's Formula – Integration as Summation.

UNIT III **(9 Hrs)**

Reduction Formulae for $x^n e^{ax}, \sin^n x, \cos^n x, \sin^n x \cos^n x, \tan^n x, \cot^n x, \sec^n x,$

$\operatorname{cosec}^n x, x^m (\log x)^n$, $e^{ax} \cos bx, e^{ax} \sin bx.$

UNIT IV **(9 Hrs)**

Area under Plane Curves - Area of a closed curves – Length of a curve – Area of Surface of revolution – Multiple Integrals – Evaluation of Double and Triple Integrals (Cartesian Co-ordinates only).

UNIT V **(9 Hrs)**

Improper Integrals – Beta and Gamma Functions – Recurrence formula of Gamma Functions – Properties of Beta Functions – Relation between Beta and Gamma Functions – Evaluation of Definite Integrals Using Gamma Functions.

Text Books

1. S. Narayanan and T. K. ManicavachagamPillay, Calculus (Major), Volume II, S. Viswanathan Printers & Publishers, 2007.
2. Integral Calculus and differential equations: Dipak Chatterjee (TATA McGraw Hill Publishing company Ltd.),2000.
3. **"C**ontent and treatment as in Vector Analysis", by P. Duraipandian and Laxmi Duraipandian. Emerald Publishers ,2017

Reference Books

1. Dr. M. K. Venkataraman, Engineering Mathematics, Volume 2, The National Publishing Company, Madras, 2001
2. Calculus, Thomas and Finney, Pearson Education, 9th Edition, 2006
3. .Integral Calculus, N. P. Bali, Laxmi Publications, Delhi,2011
4. Calculus (2nd Edition), Lipman Bers and Frank Karal, Holt McDougal, 1976.
5. Thomas' Calculus 12th Edition, George Thomas, Maurice D. Weir and Joel Hass, Pearson Education, 2015

Web Resources

1. https://www.khanacademy.org/math/integral-calculus
2. https://nptel.ac.in/courses/111/105/111105122/#
3. https://nptel.ac.in/courses/111/104/111104025/
4. https://www.khanacademy.org/math/multivariable-calculus/integrating-multivariable-functions/triple-integrals-topic/v/triple-integrals-3
5. https://www.youtube.com/watch?v=IaG-24IhULY

COURSE CODE	COURSE TITLE	L	T	P	TOTAL L+T+P	C
A20CHP202	ALLIED CHEMISTRY PRACTICAL	0	0	3	3	2

INSTRUCTIONAL OBJECTIVES

At the end of this course the learner is expected:

1.	To get a good exposure to the basic concepts of chemistry.
2.	To enable the students to acquire quantitative skills in volumetric analysis.
3.	To learn the fundamentals of conductometric and potentiometric titrations.
4.	To understand the method of determination of molecular weight by viscosity average method.

LIST OF EXPERIMENTS

1. Estimation of KMnO4 using standard Oxalic Acid
2. Estimation of K2Cr2O7 using decinormal solution of Sodium thiosulphate solution
3. Estimation of Copper using decinormal solution of Potassium dichromate solution
4. Estimation of Nickel using decinormal solution ofEDTA
5. Determination of Molecular Weight of aPolymer
6. Conductometric Titrations –I (HClvsNaOH)
7. Conductometric Titrations- II (KClvs AgNO3)
8. Potentiometric Titration (RedoxTitrations)

TEXT BOOKS

1. V.Venkateswaran, R. Veeraswamy, A.R.Kulandaivelu, Basic Principles of Practical Chemistry, 2nd Edition Sultan Chand andSons,1997.
2. Daniels et al., Experimental Physical Chemistry, 7th edition, New York, McGraw Hill, 1970.

REFERENCES

1. N.S. Gnanapragasam and G.Ramamurthy, Organic Chemistry – Lab Manual,
2. S. Viswanathan and Co., 1998.
3. A.Findlay, Practical Physical Chemistry, 7th Edition, London, Longman, 1959.
4. V.K.Ahluwalia, S.Dingra, and A.Gulati, College Practical Chemistry, Orient Longman Pvt. Ltd., Hyderabad, 2005.
5. K.K. Sharma and D.S. Sharma, Introduction to Practical Chemistry, Vikas Publishing House, New Delhi, 2005.

COURSE CODE	COURSE TITLE	L	T	P	TOTAL L+T+P	C
A20CHT202	ALLIED CHEMISTRY	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES

At the end of this course the learner is expected:

1.	To gain knowledge on the importance of basic organic chemistry
2.	To acquire knowledge about coordination compounds
3.	To promote the importance of industrial chemistry
4.	To acquire knowledge in phase rule, adsorption and fundamentals inelectrochemistry

UNIT – I Carbohydrates, Benzene and Heterocyclic Compounds

Classification of carbohydrates–Properties and uses of glucose and fructose mutarotation - Chemistry of benzene - Preparation, mechanism of electrophillic substitution reactions. Heterocyclic compounds– Preparation and properties of pyrrole and pyridine.

UNIT – II Coordination Chemistry

Nomenclature and isomerism of coordination compounds. EAN rule - VB and Crystal field theories of octahedral, tetrahedral and square planar complexes. Chelation and its industrial applications.

UNIT – III Industrial Chemistry

Hardness of water – Temporary and permanent hardness, disadvantages of hard water Boiler scales and sludges - Softening of hard water – Zeolite process - demineralization process and reverse osmosis – Purification of water for domestic use: use of chlorine, Ozone and UV light.

UNIT- IV Phase Rule and Adsorption

Phase rule- Definition of terms involved. phase diagram of H2O, Pb-Ag . Adsorption - Langmuir adsorption isotherms - Principles of chromatography (Paper, TLC and column).

UNIT –V Electrochemistry

Faradays laws of electrolysis - Specific conductance, equivalent conductance - Cell constant - Arrhenius theory Ostwald"s dilution law and Kohlrausch law - Nernst equation - Applications of EMF- Measurements.

TEXT BOOKS

1. Puri B.R., Sharma L.R., Kalia K.K., Principles of Inorganic Chemistry, ShobulalNagin Chand and Co, 2001.
2. R. Gopalan, S. Sundaram, Allied Chemistry, Sultan Chand and Sons, 1995.

REFERENCES

1. B.S. Bahl and ArunBahl, A Text book of Organic Chemistry, 21st edition, Sultan Chand and Co., 2012.
2. I.L. Finar, Organic Chemistry, Vol 1&2, 6th edition England, Addison Wesley, Longman Ltd, 1996.
3. P.W. Atkins, Physical Chemistry, 5th edition, Oxford University press, 1994.
4. M.J.Sienko and R.A.Plane, Chemistry: Principles and properties, International Student Edition, 1995.

		L	T	P	C	Hrs
A20MAO202	JAVA PROGRAMMING	2	0	0	2	45

Course Objectives

- To acquire the basics of Java programming
- To get formalized with Java packages, multithreaded programming
- To expose the students how to apply the fundamentals core java, packages.
- To understand and apply the fundamentals database connectivity for computing
- To know how to write applets

Course Outcomes

After completion of the course, the students will be able to

CO1 – learn, write Java programs
CO2– develop applets graphics programs
CO3 – implement, compile, test and run Java program
CO4 – make use of hierarchy of Java classes to provide a solution to a given set of requirements found in the Java API
CO5 – learn about Graphic programming

UNITI INTRODUCTION **(9 Hrs)**

Java Evolution: Java History, features, java and Internet, WWW, web browsers – Simple java program, program structure, tokens, statements – JVM, constants, variables, data types, type casting

UNITII OPERATORS AND EXPRESSIONS **(9 Hrs)**

Operators: arithmetic, relational, logical, assignment, increment and decrement, conditional, bitwise, special operators
Expression: arithmetic, Evaluation of expression, operator precedence and associatively
Decision making and branching: If, If Else, nesting of If Else, else if, switch? operators, while, do, for jump in loops

UNITIII CLASSES, OBJECTS **(9 Hrs)**

Defining a class: adding variables, methods, creating objects, accessing members, constructors, method overloading, nesting of methods, inheritances, overriding methods, final classes.
Arrays, Strings and Vectors: arrays, one dimensional array, two dimensional arrays, strings, vectors, wrapper classes
Interfaces: multiple inheritance, defining interfaces, extending interfaces, implementing interfaces, accessing interface variables

UNITIV PACKAGES AND MULTHITHREADED PROGRAMMING **(9 Hrs)**

API packages: using system packages, naming conventions, creating packages, accessing packages, using a package, adding a class to a package.
Basics: creating threads, extending the thread class, stopping and blocking a thread, life cycle of a thread, using thread methods, thread exceptions, synchronization, implementing the "runnable" interface
Managing Errors: types of errors, exception handling code, multiple catch statements, using finally statement

UNIT V APPLET AND GRAPHICS PROGRAMMING **(9 Hrs)**

Introduction: preparing to write applets, applet life cycle, applet tag, adding applet to a HTML file, running the applet
The graphics class: lines and rectangles, circles and ellipses, drawing arcs, drawing polygons, line graphs.

Text Books

1. R. Krishnamoorthy and S. Prabhu, Internet and Java Programming, New Age International Publishers, 2004 (Unit I).
2. Programming with Java, 4e, E. Balagurusamy, Tata McGraw-Hill, 2010.

Reference Books

1. Deitel, Deitel and Nieto, Internet and World Wide Web – How to program, Pearson Education, 2000.
2. Naughton and H.Schildt, Java 2 - The complete reference, Tata McGraw-Hill, Fourth edition, 2006.
3. Topley, J2ME in A Nutshell, O 'Reilly Publishers, 2002.
4. Hunt, Guide to J2EE Enterprise Java, Springer Publications, 2004

Web Resources

1.http://apsacollege.com/wp-content/uploads/2017/07/java-syllabus.pdf
2.https://www.youtube.com/watch?v=SQF7CAmW63c
3.https://www.gcg42.ac.in/medias/media/other/741/array-strings-and-vectors.ppt
4.https://www.guru99.com/java-packages.html
5.https://www.edureka.co/blog/java-exception-handling

A20AET202	ENVIRONMENTAL STUDIES	L	T	P	C	Hrs
	(For all UG Degree Courses)	2	0	0	2	45

Course Objectives

- To gain knowledge on the importance of natural resources and energy.
- To know the structure and function of an ecosystem
- To imbibe an aesthetic value with respect to biodiversity, understand the threats and its conservation and appreciate the concept of interdependence
- To know the causes of types of pollution and disaster management
- To observe and discover the surrounding environment through field work.

Course Outcomes

After completion of the course, the students will be able to

CO1 – Understand about the various resources
CO2– Learn about the biodiversity
CO3– Learn the different types of pollution and to prevent the pollution
CO4– know about the pollution Act
CO5– observe various environmental issues in surroundings

UNITI INTRODUCTION TO ENVIRONMENTAL SCIENCES: NATURAL RESOURCES **(9 Hrs)**

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 **(9 Hrs)**

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.

UNITIII ENVIRONMENTAL POLLUTION AND MANAGEMENT **(9 Hrs)**

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.

UNITIV SOCIAL ISSUES - HUMAN POPULATION **(9 Hrs)**

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 **(9 Hrs)**

Visit to a local area / local polluted site / local simple ecosystem - Report submission REFERENCES

Text Books

1. BharuchaErach, (2013), Textbook of Environmental Studies for Undergraduate Courses (Second edition). Telangana, India: Orient Black Swan
2. BasuMahua, Savarimuthu Xavier, (2017), SJ Fundamentals of Environmental Studies. Cambridge, United Kingdom: Cambridge University Press
3. Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.

Reference Books

1. KumarasamK., A. Alagappa Moses AND M.Vasanthy, 2004. environmental studies, Bharathidasan university pub, 1, trichy
2. Rajamannar, 2004, Environmental studies, EVR College PUB, Trichy
3. kalavathy, S. (ED.) 2004, Environmental Studies, Bishop Heber College PUB., Trichy

Web Resources

1. https://aits-tpt.edu.in/wp-content/uploads/2018/08/Environmental-Studies-Lecture-notes.doc-I_Betech_-ECE-CSE-EEE-CEME_III-Sem_BR.pdf
2. http://eagri.org/eagri50/ENVS302/pdf/lec05.pdf
3. https://www.youtube.com/watch?v=78prsPYm98g