B Sc
MATHEMATICS

SYLLABUS (2007-2010)

under
CHOICE BASED CREDIT SYSTEM
(CBCS)

ST. JOSEPH'S COLLEGE (AUTONOMOUS)

(Nationally Reaccredited with A+ Grade / College with Potential for Excellence)

TIRUCHIRAPPALLI - 620 002

Features of Choice Based Credit System (CBCS)

The Autonomous St. Joseph's College (1978) Reaccredited with A+ Grade from NAAC (2007) has introduced the choice based credit system (CBCS) for UG and PG courses from the academic year 2001-2002.

OBJECTIVES of Credit System:
* To provide mobility and flexibility for students within and outside the parent department
* To provide broad based education
* To help students learn at their own pace
* To provide students scope for acquiring extra credits
* To impart more job oriented skills to students
* To make any course multi-disciplinary in approach

What is a credit system?
Weightage to a course is given in relation to the hours assigned for the course. Generally one hour per week has one credit. However, there could be some flexibility because of practicals, field visits and tutorials. The following Table shows the relation between credits and hours.

Hours in a week	Hours (2-3)	Hours (4)	Hours (5-6)
Theory Credits	1	3	4
Practicals Credits	1	2	3

For UG courses a student must earn a minimum of 140 credits to get a pass. The 140 credits are split as follows:

		BA	BSc	BCom
English	:	16	16	8
Languages	:	12	12	12
Allied: Compulsory - 2 courses	:	10	10	10
Allied: Optional - 2 courses	:	10	8	10
Computer Literacy	:	2	2	2
Foundation Courses	:	3	3	3
Environmental Studies	:	3	3	3
Electives	:	9	9	9
SHEPHERD	:	3	3	3
Core Courses	:	<u>72</u>	<u>74</u>	<u>80</u>
Total	:	<u>140</u>	<u>140</u>	<u>140</u>

A student can acquire credits more than 140 by taking electives offered by departments in the free hours available to him in 5th and 6th semesters.

Allied Courses:
The allied courses are of two categories.
Allied Compulsory and Allied Optional: The student has choice in allied optional as two courses are offered simultaneously. The department must offer two courses. The student has to choose one.

Electives
A student should take at least three electives.
A least one elective should be from Arts Department for a student of Science Department and vice versa for Arts students.
A student cannot take more than one elective from his parent department.

Credit System Codes - Subject Code Fixation

The various papers in the different courses are coded. The following code system is adopted.

- The code number of the subject should be as **07UPH1XX** where
  - a) 07 refers to year of revision
  - b) U refers to Undergraduate
  - c) PH refers to Physics*
  - d) 1 refers to Semester 1
  - e) 0X refers to Languages (Part 1)
  - f) 1X refers to General English (Part 2)
  - g) 2X refers to Core Major (Part 3)
  - h) 5X refers to Core Allied Compulsory (Part 3) } X - Paper number
  - i) 7X refers to Core Allied Optional (Part 3)
  - j) 8X refers to Elective (Part 3)
  - k) 9X refers to Foundation Course (Part 4)

- The code number of the subject should be as **07PEC1XX** where
  - a) 07 refers to year of revision
  - b) P refers to Postgraduate
  - c) EC refers to Economics*
  - d) 1 refers to Semester 1
  - e) 2X refers to Core
  - f) 4X refers to Optional } X-Paper number
  - g) 6X refers to EDC

Codes for Departments:

Sl. No.	Course	Subject Code
1.	Biochemistry	BI
2.	Biotechnology	BT
3.	Business Administration	BU
4.	Chemistry	CH
5.	Commerce	CO
6.	Computer Applications	CA
7.	Computer Science	CS
8.	Information Technology	IT
9.	Economics	EC
10.	English	EN
11.	English - General	GE
12.	Electronics	EL
13.	Foundation Course	FC
14.	French	FR
15.	Hindi	HI
16.	History	HS
17.	Human Resource Management	HR
18.	Mathematics	MA
19.	Physics	PH
20.	Plant Biology & Plant Biotechnology	PB
21.	Personnel Management & Industrial Relations	PM
22.	Sanskrit	SA
23.	Statistics	ST
24.	Tamil	TA
25.	Tamil - General	GT
26.	Transport Management	TM

Evaluation

For each course there is formative Continuous Internal Assessment (CIA) and Semester Examinations (SE) in the weightage ratio 50:50. The following table illustrates how one evaluates the **Overall Percentage Marks** (OPM) for a student in Part I (English) in the four papers put together.

$$OPM \quad = \quad a_1b_1 + a_2b_2 + a_3b_3 + a_4b_4 / (b_1+b_2+b_3+b_4)$$

Where a_1, a_2, a_3 and a_4 indicate the marks obtained in the 4 semesters for English and b_1, b_2, b_3 and b_4 indicate the corresponding credits for the 4 courses. For example let us consider the following marks scored by a student in the 4 semesters in English.

Part II-General English

S. No.	Sem.	Subject	CIA	SE	Total	Avg	Credit	Cr.pts
1.	I	GE-I	50	48	98	49.0	4	196.0
2.	II	GE-II	50	48	98	49.0	4	196.0
3.	III	GE-III	50	50	100	50.0	4	200.0
4.	IV	GE-IV	50	48	98	49.0	4	196.0
		TOTAL						**788.0**

OPM = 788 / total number of credits = 788.0 / 16 = 49.25

This percentage corresponds to III class.

If OPM is between 50 and 60 the student gets II class. If OPM is 60 and more then the student is placed in I class.

If scores OPM=75 and more he gets first class with distinction.

Similarly we can compute OPM for part II and Part III using the marks in various subjects and the corresponding credits.

Part IV consists of foundation courses, computer literacy, SHEPHERD programme, Service Organisation and only a pass is indicated for these and Part IV is not taken into account for computing OPM.

Declaration of result:

_____ has successfully completed B.Sc. degree course with FIRST CLASS. His overall average percentage of marks in part III is _____. He has acquired 11 more credits in the course by taking Foundation Courses, Environmental Studies, Computer Literacy, and SHEPHERD programme.

B. Sc. MATHEMATICS - COURSE PATTERN

Sem	Part	CODE	Title of the paper	Hrs	Cr
I	I	*	General Language-I	4	3
	II	07UGE111	English-I	5	4
	III	07UMA121	Basic Mathematics	6	5
	III	07UMA122	Integral Calculus	5	4
	III	07UMA151	Allied :Statistics-I	6	5
	IV	07UFC191	Foundation of Humanity	2	1
			Library	2	
			Total for Semester I	**30**	**22**
II	I	*	General Language-II	4	3
	II	07UGE212	English-II	5	4
	III	07UMA223	Analytical Geometry	6	5
	III	07UMA224	Differential Equations	5	4
	III	07UMA252	Allied: Statistics-II	6	5
	IV	07UFC292	Computer Literacy	2	2
	IV	07UFC293	Social Analysis	2	1
			Total for Semester II	**30**	**24**
III	I	*	General Language-III	4	3
	II	07UGE313	English-III	5	4
	III	07UMA325	Classical Algebra	7	6
	III	07UPH371	Allied: Physics-I	(4)	(3)
	III	@	Allied: Physics Practical/or	(2)	
	III	07UCO371	Allied: Accounts-I	5	4
	IV	07UFC394	Social Ethics /or		
	IV	07UFC395	Religious Doctrine-I	2	1
	IV	07UFC396	Environmental Studies	4	2
			Library	3	
			Total for Semester III	**30**	**20**
IV	I	*	General Language-IV	4	3
	II	07UGE414	English-IV	5	4
	III	07UMA426	Algebra I	7	6
	III	07UPH472	Allied: Physics -II	(4)	(3)
	III	07UPH473	Allied: Physics Practical / or	(2)	(2)
	III	07UCO472	Allied: Accounts- II	5	4
		*	Elective- I	4	3
	IV	07UFC497	Building Men for others / or		
	IV	07UFC498	Religious Doctrine- II	2	1
			Library	3	
			Total for Semester IV	**30**	**21**
V	III	07UMA527	Algebra-II	6	5
	III	07UMA528	Real Analysis	6	5
	III	07UMA529	Statics	7	6
	III	07UMA530	Discrete Mathematics / or	7	6
	III	07UMA531	Astronomy	7	6
		*	Elective- II	4	3
			Total for Semester V	**30**	**25**
VI	III	07UMA631	Complex Analysis	7	6
	III	07UMA632	Operations Research	6	5
	III	07UMA633	Dynamics	6	5
	III	07UMA634	Computer Oriented Numerical Methods in 'C'	5	4
	III	07UMA635	Computer Lab ('C' Programming)	2	2
		*	Elective - III	4	3
			Total for Semester VI	**30**	**25**
			SHEPHERD Extension service		3
			Total Credit for all Semesters	**180**	**140**

* Code Numbers According to the subjects chosen.
@ Exam at the end of the IV Semester

Sem:I Hours : 5
07UGT101 Credits: 4

பொதுத்தமிழ் - 1

நோக்கங்கள்:

1. சமுக மாற்ற உணர்வை ஊட்டும் தலைசிறந்த தற்காலக் கவிஞர்கள், உரைநடை ஆசிரியர்களது படைப்புகளின் இலக்கியநயம் பாராட்டல்.

2. சந்திப்பிழையின்றி எழுதப் பயிற்றுவித்தல்

பயன்கள்

1. சமுக உணர்வூட்டும் படைப்புகளை அழகியல் நுகர்ச்சி வாயிலாக மாணாக்கர் கற்றுக்கொள்வர்.

2. சந்திப்பிழை நீக்கி எழுதும் திறன் பெறுவர்.

செய்யுள் திரட்டு

1. மகாகவி பாரதியார் கவிதைகள்
2. பாரதிதாசன் கவிதைகள்
3. சுத்தானந்த பாரதியார், தமிழ்க்கனல் ஷஎன்னருமைத் தமிழர்களே'
4. கவிமணி கவிதைகள்
5. கவிஞர் கண்ணதாசன் - இயேசு காவியம்
6. பெருஞ்சித்திரனார் பாடல்கள்
7. அப்துல் ரகுமான் - ஆலாபனை
8. கவிஞர் அறிவுமதி கவிதைகள்
9. மொழிபெயர்ப்புக் கவிதைகள்
10. இலக்கணம்: வல்லினம் மிகும் - மிகா இடங்கள்

இலக்கிய வரலாறு - மூன்றாம் பாகம்
சிறுகதை
உரைநடை : முதல் ஆறு கட்டுரைகள்

பாடநூல்

1. செய்யுள் திரட்டு - தமிழ்த்துறை வெளியீடு, 2004-2007
2. இலக்கணம் - மேற்குறித்த நூலில் உள்ளது.
3. *சமூகவியல் நோக்கில் தமிழ் இலக்கிய வரலாறு*, தமிழ்த்துறை வெளியீடு
4. உரைநடை நூல் - *திறன் வளர்க்கும் கட்டுரைகள்*, தமிழ்த்துறை வெளியீடு, 2004-05 (அறக்கட்டளைச் சொற்பொழிவு நீங்கலாக 12 கட்டுரைகள்)
5. சிறுகதை: உறவு, நியுசெஞ்சுரி புத்தகநிலையம், சென்னை, 2007 முதற்பதிப்பு

Sem.: I   Hours   : 5
Code: 07UGE111   **GENERAL ENGLISH - I**   Credits : 4

Objectives
1. To enable students develop their communication skills.
2. To inculcate in students the four basic skills: Reading, Writing, Listening and Speaking.

Unit I
1. Prose   : At the College
2. Shakespeare   : The Merchant of Venice
3. Essential English Grammar   : Units 1 to 5
4. Reading Comprehension

Unit II
5. Poetry   : The Passionate Shepherd to his Love
6. Shakespeare   : The Taming of the Shrew
7. Essential English Grammar   : Units 6 to 10
8. Letter Writing   : Informal

Unit III
9. Prose   : Outside the Class
10. Shakespeare   : The Tempest
11. Essential English Grammar   : Units 11 to 15
12. Letter Writing   : Formal

Unit IV
13. Prose   : For Business and Pleasure
14. Poetry   : Daybreak
15. Shakespeare   : Julius Caesar
16. Essential English Grammar   : Units 16 to 22

Unit V
17. Poetry   : I love to see it lap the miles
18. Shakespeare   : King Lear
19. Shakespeare   : Macbeth
20. Essential English Grammar   : Units 23 to 29

Required Reading
1. Krishnaswamy, N. & T. Sriraman: Creative English for Communication (Macmillan)
2. Raju, A.K. (ed.)   : Pegasus (Macmillan)
3. Murphy, R.   : Essential English Grammar (CUP)
4. Dodd, E.F.   : Six Tales from Shakespeare (Macmillan)

Sem - I   Hrs/ Week: 6
07UMA121   Credit: 5

BASIC MATHEMATICS

Unit I
Successive differentiation-Liebnitz theorem-Radius of curvature-Jacobians-Drawing the graphs of e^x, e^{-x}
(Pages. 2.1 to 2.17, 3.46 to 3.53, 6.1 to 6.34)

Unit II
Expansions of sin nx, cos nx, tan nx, $\sin^n x$, $\cos^n x$, $\sin^m x\cos^n x$, sin x,cos x,tan x- Logarithms of complex numbers-Hyperbolic & inverse hyperbolic functions.

Unit III
Binomial theorem for a rational index, without proof-Coefficient of x^n-Summation of Binomial series- Approximations using Binomial Expansions.

Unit IV
Exponential and Logarithmic series-Coefficient of x^n-Summations and Approximations using these two series.

Unit V
Polar equation of a straight line-Polar equation of a circle-Polar equation of Conic-Equation of chord-Asymptotes of the conic.

Books for Study
1. Algebra ,Calculus & Trigonometry-P.R.Vittal & V. Malini, Margham Publications, Chennai.
2. Vector Analysis - P.R.Vittal & V.Malini, Margham Publications,Chennai.
3. Dr.P.R.Vittal and Malini.V: Calculus 3rd Edition(For Polar co-ordinates only) Margham Publications, Chennai.

Sem - I   Hrs/Week: 5
07UMA122   Credits: 4

INTEGRAL CALCULUS

Objectives
1. To provide geometrical applications of integration.
2. To introduce vector calculus and study the relation between surface and volume integrals.

UNIT I

Revision of all integration models including Integration of rational and irrational functions.
(Articles upto 10 of chapter I)

UNIT II

Properties of definite integrals-integration by parts (Articles 11 & 12 of Chapter I).

UNIT III

Reduction formulae for $x^n e^{ax}$, $x^n \cos ax$, $\sin^n x$, $\cos^n x$, $\sin mx \cos nx$, $\tan^n x$, $\cot nx$, $\sec nx$, $\csc nx$, $x^m(\log x)^n$.
(Articles 13-15 of chapter 7)

UNIT IV

Area under plane curves-areas of a closed curve-areas in polar coordinates-area of surface revolution-multiple integrals-evaluation of double integrals-triple integrals.
(Articles 1,4,5 of chapter 2; Articles 1-4 of chapter 5)

UNIT V

Recurrence formula of Gamma functions-properties of Beta functions-relation between Beta and Gamma functions-evaluation of definite integrals using Gamma functions.
(Articles 2-5 of chapter 7)

Books for Study
1. Narayanan and Manickavasagam Pillay, T.K.: Treatment as in Calculus Volume II, (For units I to V).

Sem - I   Hrs/Week: 6
07UMA151   Credit   : 5

ALLIED STATISTICS - I

Objectives:
1. To make the students gain wide knowledge in probability which plays a main role in solving real life problems.
2. To apply these techniques to real life problems.

Unit-I
Short History -Basic Terminology - Axiomatic approach to probability - Some Theorems on Probability - Mathematical Notion - Conditional probability- Multiplication Theorem of Probability -Independent Events-Pairwise Independent Events - Baye's theorem.
Ch. 3: Sec 3.2-3.5, 3.8 (Omit 3.8.3, 3.8.4),3.9 (Omit 3.9.2),3.10-3.12,3.15 Ch 4: Sec 4.2 (Omit 4.2.1)

Unit-II
Random variable - Distribution function - Discrete random variable - Continuous random variable - Two-dimensional random variable.
Ch 5 Sec 5.1-5.5 (Omit 5.5.6-5.5.7)

Unit-III
Mathematical expectations - Expected value of function of a random variable - Properties of expectation - Properties of variance - Covariance -Moment generating function - Cumulants - Chebychev's inequality.
Ch 6: Sec 6.1 - 6.6. Ch 7: Sec 7.1 - 7.2.

Unit-IV
Binomial distributions- Poisson distributions - Geometric distributions
Ch 8 : Sec 8.4(Omit 8.4.3,8.4.10-8.4.12),8.5 and 8.7

Unit-V
Normal distributions - Gamma distributions - Beta distributions of first and second kind - Exponential distributions (Ch 9: Sec 9.2 (Omit 9.2.11-9.2.15), 9.5 -9.8.

Books for Study
1. Gupta, S.C. and Kapoor, V.K.: Fundamentals of Mathematical Statistics (11th edition), Sultan Chand and Sons, 1982.

Books for Reference
1. Dr. P.R. Vittal: Mathematical Statistics, Margham Publications, Chennai.

Sem:II   Hours : 5
07UGT202   Credits: 4

<div align="center">பொதுத்தமிழ்-2</div>

நோக்கங்கள்

1. சமயநல்லிணக்க உணர்வை வளர்த்தல்
2. தமிழ்க்காப்பியங்களில் அழகும் அறிவுணர்வும் ஊட்டும் பகுதிகளைப் படித்துப் புரிந்து கொள்வர். உரைநடைக்கட்டுரை எழுதும் திறன் பெறுவர்.

பயன்கள்

தமிழைத் திருத்தமாகப் படிக்கவும் பேசவும் பிழையின்றி எழுதவும் தேர்ச்சி பெறுதல்.

தம் படைப்புக்களில் படித்தவற்றை முறையாகப் பயன்படுத்தல்

1. செய்யுள் திரட்டு

1. சிலப்பதிகாரம்
2. மணிமேகலை
3. சீவகசிந்தாமணி
4. கம்பராமாயணம்
5. தேம்பாவணி
6. சீறாப்புராணம்
7. இரட்சணிய சரிதம்
8. இலக்கணம்: எழுத்து, சொல்

2. இலக்கணம் - எழுத்து, சொல் (தமிழ்த் துறை வெளியீடு)

இலக்கிய வரலாறு - இரண்டாம் பாகம் (தமிழ்த்துறை வெளியீடு,2001)

உரைநடை நூல்-7 முதல் இறுதிக்கட்டுரைகள் வரை, திறன்வளர்க்கும் கட்டுரைகள் (7-12) (தமிழ் ஆய்வுத்துறை வெளியீடு, 2001)

பாடநூல்:

செய்யுள் திரட்டு - தமிழ்த்துறை வெளியீடு, 2004-07

Sem.   : II   Hours   : 5
Code   : 07UGE212   Credits : 4

GENERAL ENGLISH - II

Objectives
1. To enable students develop their communication skills.
2. To inculcate in students the four basic skills: Reading, Writing, Listening and Speaking.

Unit I
1. Prose   : Are you Smart?
2. Jules Verne   : Around the World in 80 Days (Chap. 1 to 5)
3. Essential English Grammar   : Units 30 to 35
4. Reading Comprehension

Unit II
5. Poetry   : Gitanjali (Song 36)
6. Jules Verne   : Around the World in 80 Days (Chap. 6 to 10)
7. Essential English Grammar   : Units 36 to 40
8. Note-making

Unit III
9. Prose   : Are you Creative?
10. Jules Verne   : Around the World in 80 Days (Chap. 11 to 15)
11. Essential English Grammar   : Units 41 to 45
12. Note-taking

Unit IV
13. Prose   : How to Win?
14. Poetry   : The Pond
15. Jules Verne   : Around the World in 80 Days (Chap. 16 to 20)
16. Essential English Grammar   : Units 46 to 50

Unit V
17. Poetry   : The Tree
18. Jules Verne   : Around the World in 80 Days (Chap. 21 to 26)
19. Essential English Grammar   : Units 51to 57
20. Dialogue Writing

Required Reading
1. Krishnaswamy, N. & T. Sriraman : Creative English for Communication (Macmillan)
2. Raju, A.K. (ed.)   : Pegasus (Macmillan)
3. Murphy, R.   : Essential English Grammar (CUP)
4. Verne, J. (Retold by M. Green) : Around the World in Eighty Days (Macmillan)

Sem-II   Hrs/Weeks: 6
07UMA223   Credits   : 5

ANALYTICAL GEOMETRY

Objectives:
1. To introduce Polar equations of conics and properties.
2. To study Sphere, Cone and Cylinder in Cartesian co-ordinates.

Unit I
Coordinates in space-Direction cosines of a line in space-angle between lines in space-equation of a plane in normal form.
(Chapter I, Sec 1.5 to 1.9, Chapter II Sec 2.1 to 2.3, Pages: 10-31)
Angle between planes-Distance of a plane from a point-Straight lines in space-line of intersection of planes-plane containing a line.
(Chapter II Sec 2.4 to 2.8 pages: 32-47, Chapter III Sec 3.1 to 3.3 pages: 55-68)

Unit II
Coplanar lines-skew lines and Shortest distance between skew lines-Length of the perpendicular from a point to a line.
(Chapter III Sec 3.4 to 3.7 pages: 70-89)

Unit III
General equation of a sphere-Section of a sphere by a plane-tangent planes-condition of tangency-system of spheres generated by two spheres- system of spheres generated by a sphere and a plane.
(Chapter VI Sec 6.1 to 6.6 pages: 121-143)

Unit IV
Gradient, Divergence and Curl-Definitions, identities and simple problems-Directional derivative and Laplacian-Definition and simple problems.

Unit V
The line integral-Volume integral-Surface integral, Gauss. Divergence theorem, Stoke's theorem (Omit proofs of these two theorems)
(Chapter VI, page 136-177)

Books for Study
1. Shanthi Narayanan and Mittal P.K:Analytical Solid Geometry 16th Edition
   (For units I to V) S.Chand & Co, New Delhi.
2. Dr.P.R.Vittal and Malini.V: Calculus 3rd Edition(For Polar co-ordinates only)
   Margham Publications, Chennai.
3. Narayanan and Manickavasagam Pillay, T.K.: Treatment as in Vector Algebra and Analysis (For unit V), S.Viswanathan (Printers & Publishers) Pvt.Ltd.

Sem-II   Hrs/Week: 5
07UMA224   Credit: 4

DIFFERENTIAL EQUATIONS

Objectives
1. To study DE's and PDE's of first and second order.
2. To study Fourier series and application of Laplace transforms in solving DE's.

Unit - I
Variables separable , Homogenious equations, Non- Homogenious equations of the first degree in x and y- Linear equations - Bernoulli's equation - Exact differential equations - First order DE of higher degree.
[Chapter II : Sections 1 - 6.3 &   Chapter IV: full]

Unit - II
Linear DE with constant coefficients - particular integrals - General method of finding P.I - Special   methods   for finding   P.I-When X is of the form x^m - Equations reducible to the linear equations
[Chapter V : Sections 1 - 6]

Unit - III
Definition of The Laplace transforms - Properties of Laplace transform - Laplace transform of periodic functions- some general Theorems - The inverse transform - solving linear DE using Laplace transforms.
[Chapter IX : Sections 1 - 8]

Unit - IV
Fourier series - Fourier series for even and odd functions - Half range expansions
[Chapter I : Sections - 1,2,6,8,9,10 (omit change of interval , Proofs and derivations)]

Unit V
Formation of partial Differential Equations - solution of simple types - First order PDE - Charpits method - Homogenious and non homogenious equatios - linear PDE with constant coefficients
[Chapter II , omit sections 10,11, numerical problems only]

Books for Study
1. Differential equations and its applications by S.Narayanan & T.K. Manichavasagam Pillay - S.Viswanathan PVT. LTD -2001 Edition   [For units I , II , III]
2. Engineering Mathematics - III year part B by M.K . Venkatraman [For units IV & V]

Books for Reference
1. Engineering Mathematics - Volume II by M.K.Venkatraman National Publishing company, Chennai   (for units I & II)
2. Engineering Mathematics - III year part A by M.K.Venkatraman National Publishing company, Chennai   (for Unit III)

Sem - II   Hrs/Week: 6
07UMA252   Credit   : 5

ALLIED STATISTICS - II

Objectives
1. To make the students gain wide knowledge in probability which plays a main role in solving real life problems.
2. To apply these techniques to real life problems.

Unit-I
Introduction - Types of Sampling - Parameter and Statistic - Tests of significance - Test of significance - Procedure for testing of hypothesis - Test of significance for large samples - Sampling of attributes - Sampling of variables. Ch 14 Full

Unit-II
Introduction - Derivation of the chi-square distribution - MGF of chi-square distribution - Application of chi-square distribution. Ch 15 : Sec 15.1- 15.3, 15.6 (Omit 15.6.4-15.6.7)

Unit-III
Introduction - Student's t- distribution - Applications of t-distribution - Distribution of sample correlation coefficient when population correlation coefficient is zero- F-distribution - Applications of F-distribution.
Ch 16: Sec 16.1-16.6

Unit- IV
Introduction - Characteristics of estimators - Consistency - Unbiasedness- Efficient and Most Efficient Estimators - Sufficiency (Definition only) - Methods of Estimation - MLE(statement of properties and direct simple problems, no theorems) - method of moments. Ch15: Sec 17.1-17.2 (Omit MVU Estimators and Factorisation Theorem), 17.6 (Omit 17.6.2, 17.24)

Unit-V
Introduction - Meaning of Correlation - Scatter diagram - Karl Pearson's Coefficient of Correlation - Rank Correlation. Ch 10: Sec 10.1 -10.4, 10.7.

Books for Study
1. Gupta, S.C. and Kapoor, V.K.: Fundamentals of Mathematical Statistics (11th edition), Sultan Chand and Sons, 1982.

Books for Reference
1. Dr. P.R. Vittal: Mathematical Statistics , Margham Publications, Chennai.

Sem:III   Hours : 5
07UGT303   Credits: 4

<center>பொதுத்தமிழ்-3</center>

நோக்கங்கள்

1. தமிழ்ச்செய்யுள்களைப் படித்துப் பொருள் புரிந்து கொள்ளுதல்

2. செய்யுள்களில் அமைந்துள்ள சமூகக்கருத்துக்களை உணர்தல்

3. படைப்புத்திறனை வளர்த்தெடுத்தல்

பயன்கள்

1. புரிந்து கொண்ட கருத்துக்களில் பயனுள்ளவற்றைத் தெளிவாக, இனிமையாக எடுத்துச்சொல்லும் திறனைப் பெறுதல்.

2. தமிழ் மொழியின் சிறப்பை அறிதல்.

செய்யுள் திரட்டு

1. குறுந்தொகை

2. பதிற்றுப்பத்து

3. கலித்தொகை

4. புறநானூறு

5. சிறுபாணாற்றுப்படை

6. பதினெண் கீழ்க்கணக்கு - திருக்குறள்

7. இலக்கணப் பகுதி: யாப்பு, அணி

இலக்கணம் : யாப்பு, அணி

புதினம் - சூரியகாந்தன், *அம்மன் பூவோடு*, பாவைபதிப்பகம், சென்னை, 2003

இலக்கிய வரலாறு - முதல் பாகம்.

பாடநூல்

செய்யுள் திரட்டு - தமிழ்த்துறை வெளியீடு 2004-07

சமூகவியல் நோக்கில் இலக்கிய வரலாறு - தமிழ்த்துறை வெளியீடு

Sem. : III   Hours : 5
Code : 07UGE 313   Credits : 4

GENERAL ENGLISH - III

Objectives
1. To enable students to acquire reading habit and thus develop their reading skills.
2. To make them activate their passive vocabulary and sentence structures through prescribed texts.
3. To enhance their taste for reading that will naturally develop their vocabulary power and sentence structures.
4. To develop the listening, speaking and writing skills of students through the prescribed texts.

Unit – I
1. Guy de Maupassant   : The Diamond Necklace
2. Emile Gaboriou   : The Accursed House
3. Sheila Kaye-Smith   : Mrs. Adis
4. Anton Tchekov   : The Bet
5. Reading Comprehension

Unit – II
6. O. Henry   : After Twenty years
7. Leonard Merrick   : The Judgement of Paris
8. Stephen Leacock   : The Conjuror's Revenge
9. A.E. Coppard   : The Halfyard Ham
10. Expansion of a Maxim

Unit – III
11. Far From the Madding Crowd : Chapters 1 to 4
12. Far From the Madding Crowd : Chapters 5 to 8
13. Far From the Madding Crowd : Chapters 9 to 11
14. Far From the Madding Crowd : Chapters 12 and 13
15. Essential English Grammar : Units 58 to 72

Unit – IV
16. P.G. Wodehouse   : The Prize Poem
17. Mulk Raj Anand   : The Barber's Trade Union
18. R.K. Narayan   : Wife's Holiday
19. Kushwant Singh   : The Mark of Vishnu
20. Essential English Grammar : Units 73 to 91

Unit - V
21. Far From the Madding Crowd : Chapters 14 to 15
22. Far From the Madding Crowd : Chapters 16 to 18
23. Far From the Madding Crowd : Chapters 19 to 21
24. Far From the Madding Crowd : Chapters 22 to 24
25. Précis Writing

Required Reading
1. Ramesh, K.P. (Ed.)   : The Diamond Necklace and Other Stories (Macmillan)
2. Hardy,T. (Retold by EF Dodd) : Far From the Madding Crowd (Macmillan)
3. Murphy, Raymond   : Essential English Grammar (CUP)

Sem III   Hours/Week: 7
07UMA325   Credits   : 6

CLASSICAL ALGEBRA

Objectives
1. To lay a good foundation for the study of Higher Pure Mathematics.
2. To train the students in Operative Algebra.

Unit I:
Inequalities - Triangle inequalities - The Arithmetic Geometric and the Harmonic Means the Cauchy-Schwarz Inequality - Some more inequalities
[Text Book 1: Chapter 2 Secs 2.0 to 2.5 ~ Pages 7 to 35]

Unit II:
Sequences - Bounded sequences - Monotonic Sequences - Convergent Sequences - Divergent and Oscillating sequences - The algebra of Limits.
[Text Book1: Chapter 3: Secs 3.0 to 3. 6 ~ Pages 39 to 68]

Unit III:
Behaviour of Monotonic Functions - Some theorems on Limits - Subsequences - Limit Points -Cauchy Sequences
[Text Book1: Chapter 3: Secs 3.7 to 3. 11 ~ Pages 68 to 102]

Unit IV:
Infinite Series - Comparison Test - D'Alembert's Ratio Test - Cauchy's Root Test-Alternating Series - Absolute Convergence
[Omit Kummer's Test, Gauss's Test and Cauchy's Condensation Test - Proof not required for D'Alembert's Ratio Test & Cauchy's Root Test]
[Text Book1: Chapter 4: Secs 4.1 to 4.4&Secs5.1&5.2~ Pages112 to151, 157 to 167]

Unit V:
Roots occurring in pairs - Relation between roots and co-efficients - Sum of the r th powers of the roots - Newton's theorem - Transformation of equations - Reciprocal equations (only problem-solving in Reciprocal equations) - To increase or decrease the roots of an equation by a quantity - Descarte's rule of signs .
[Text Book 2: Chapter 6: § 9 to 11, 13 to 19 & 24 ~ Pages 288 to302, 308 to 334, 351 to 354]

Books for Study
1. Sequences and Series - Dr. S.Arumugam & Mr.A.Thangapandi Isaac New Gamma Publishing House - 2002 Edition
2. Algebra Vol I - T.K.Manicavachagom Pillai & others S.Viswanathan Printers and publishers Pvt. Ltd - 2004 Edition

Books for Reference
1. Algebra - Prof. S. Surya Narayana Iyer
2. Algebra - Prof M.I.Francis Raj

Sem III   Hours / Week : 4
07 UPH 371   Credits : 3

Allied: PHYSICS - I

Objectives:

- To acquire knowledge about mechanics and moving particles
- To study gravitation and elasticity and acquire knowledge about planets, satellites and their movements.
- To understand the principles of musical sound, sound waves and their application in day- to-day life.
- To study the various optical instruments and learn the method of handling them.
- To know the different types of semiconductor devices and their applications in radio and television system

Unit I : MECHANICS

Moment of Inertia –Radius of gyration – Angular Momentum – torque – Theorems of M.I - M.I. of uniform rod, disc, circular ring, Annular ring, solid sphere – Acceleration of a body rolling down an inclined plane-SHM-velocity, time, period, frequency, phase-equations of wave motion-compound pendulum- center of suspension-interchangeability center of oscillation and suspension

Unit II : GRAVITATION AND ELASTICITY

Newton's law of gravitation-verification of G –Kepler's laws-relation of G and g - mass and density of earth-variation of g - orbital velocity-escape velocity-types of modulii-relation between y,n & σ –bending of beams-bending moment-cantilever-cantilever loaded at one end-supported at two ends and loaded in the middle.

Unit III : SOUND

Velocity of transverse waves along a stretched string-laws of transverse vibration of strings-verification of laws- Melde's experiment-ultrasonics- piezo-electric effect-production of ultrasonics-Experiment-detection of ultrasonics-applications-determination of velocity of sound in a liquid-reverberation-absorption

Unit IV : OPTICS

Chromatic abberation-spherical abberation-spectrometer-determination of refractive index-Newton's rings-determination of wavelength and refractive index of liquid-plane transmission grating-resolving power of diffraction grating-determination of wavelength-double refraction Nicol prism-specific rotation-Laurant's polarimeter – Half shade device.

Unit V : BASIC ELECTRONICS

Intrinsic and extrinsic semi conductors-p-n junction-forward bias, reverse bias-volt-ampere characteristics of p-n junction diode-full wave rectifier- zener diode, tunnel diode, photo diode, LED, LCD-transistor-CE and CB characteristics-transistor amplifier-FET-characteristics and amplifier

Books for Study:

1. A.S.Vasudeva, Modern Engineering Physics, S.Chand and CompanyLtd., 1988.
2. Cyclostyled text

Unit	Book		Sections
I	1	Part –I	4.2,4.3,4.6,4.7,4.9-4.11,4.13-4.16,4.20
		Part – IV	1.1-1.6,2.3,1.8-1.10.
II	1	Part I	2.1-2.5,2.7,2.12,2.13,5.4, 5.9,5.15-5.19.
III	1	Part – IV	4.1-4.4,6.1-6.9
IV	1	Part – III	2.4,2.9,4.25-4.27,5.21,5.27,5.28,6.10,6.16,6.28- 6.30.
V	2	Cyclostyled text.	

Sem-III   Hours/Week: 6
07UCO371   Credits: 5

ALLIED: ACCOUNTS - I

Objectives :
1. To enable the students to have a thorough knowledge of the fundamental concept & basic principles of Accountancy.
2. To provide knowledge on maintaining various book of accounts.

Unit 1
Accounting principles- concepts-Subsidiary Books –Ledger.

Unit 2
Trial Balance – Bank Reconciliation Statement.

Unit 3
Trading, Profit and Loss Accounts – Balance Sheet of a Sole Trader (Simple Adjustments)

Unit 4
Non – trading Organization – Preparation of Income and Expenditure Account form Receipts and Payment Accounts (Simple Adjustments)

Unit 5
Single Entry or Accounts from Incomplete records.

Text Book
TS Reddy & A Murthy, Financial Accounting, Margham Publications, Chennai,2006

References
1. Shukla MC, Grewal TS & Gupta SC, 2006 Advanced Accounts Volume I , S. Chand & Company Ltd., New Delhi.
2. R. L. Gupta & V. K. Gupta, 2006, Financial Accounting, Sultan Chand & Sons, New Delhi
3. R. L Gupta & M. Radhaswamy,2006, Advanced Accountancy , Volumen I, Sultan Chand & Sons, New Delhi
4. S.P. Jain & K.L. Narang ,2004, Advanced Accountancy Volume I, Kalyani Publishers
5. S N Maheshwari & S K Maheshwari, 2005, Introduction to Accouncy, Vikas Publishing House Pvt. Ltd., New Delhi.

Sem: IV   Hours : 5
07UGT404   Credits: 4

பொதுத்தமிழ்-4

நோக்கம்

1. நாடகத்தின் நோக்கம், அதன் போக்கு, உத்திகள், பாத்திரப்பாங்கு, உரையாடல் முறை, கற்பனைத்திறம் போன்றவற்றை வெளிப்படுத்தல்

2. புதிய நாடகங்களைப் படைக்கும் திறனை மாணவர்களிடையே உருவாக்குதல்.

பயன்கள்

1. நாடகவழி அழகியல் உணர்வுகளை வளர்த்தல்.

2. நாடகங்களைச் சமூகப் பயன்பாட்டிற்கு ஏற்ப உருவாக்குதல்

செய்யுள் நாடகம் :

மனோன்மணீயம், பேராசிரியர் சுந்தரனார்

அலகு 1: மனோன்மணீயம், பாயிரம், அங்கம் 1, களம் 1-5 வரை

அலகு 2: மனோன்மணீயம், பாயிரம், அங்கம் 2, களம் 1-3 வரை

அலகு 3: மனோன்மணீயம், பாயிரம், அங்கம் 3, களம் 1-4 வரை

அலகு 4: மனோன்மணீயம், பாயிரம், அங்கம் 4, களம் 1-5 வரை

அலகு 5: மனோன்மணீயம், பாயிரம், அங்கம் 5, களம் 1-3 வரை

உரைநடை நாடகம் :

முனைவர் ஆ. சிவக்கண்ணன், *பேராசிரியர் பிரம்மச்சாரி*, நியூசெஞ்சுரி புத்தகநிலையம், 2005. (உரைநடை நாடகம் முழுமையும்)

பாடநூல்

1. பேராசிரியர் சுந்தரனார் , மனோன்மணீயம் - (பதி) தமிழ்த்துறை,
   தூய வளனார் கல்லூரி, திருச்சிராப்பள்ளி

2. முனைவர் சிவக்கண்ணன், *பேராசிரியர் பிரம்மச்சாரி*, பாவைப்பதிப்பகம்.

மதிப்பெண் பகிர்வு

மனோன்மணீயம்   - 80

உரைநடை நாடகம்   - 20

உரைநடை பாகம் 3-இல் நாடகம் கட்டுரை வினாவில் மட்டும் இடம் பெற வேண்டும்.

Sem.   : IV   Hours   : 5
Code   : 07UGE414   Credits : 4

GENERAL ENGLISH - IV

Objectives
1. To enhance reading skills towards developing vocabulary power and composition skills.
2. To create in students a taste for enjoying English One-Act Plays thus making them imbibe dramatic skills.
3. To develop the listening, speaking and writing skills of students through the prescribed texts.

Unit – I
1. A. Ball   : The Seven Slaves
2. R.H. Wood   : Post Early for Christmas
3. Reading Comprehension
4. Essential English Grammar   : Units 92 to 98

Unit – II
5. Monica Thorne   : The King Who Limped
6. A.E.M. Bayliss   : One Good Turn
7. A Tale of Two Cities   : Part I
8. Essential English Grammar   : Units 99 to 106

Unit – III
9. A Tale of Two Cities   : PART II: Chapters 1 to 3
10. A Tale of Two Cities   : PART II: Chapters 4 to 7
11. A Tale of Two Cities   : PART II: Chapters 8 to 10
12. General Essay

Unit – IV
13. Allan Monkhouse   : Night Watches
14. Ella Adkins   : The Unexpected
15. A Tale of Two Cities   : PART II: Chapters 11 to 13
16. Essential English Grammar   : Units 107 to 114

Unit – V
17. Josephina Niggli   : Sunday Costs Five Pesos
18. A Tale of Two Cities   : PART III: Chapters 1 to 5
19. A Tale of Two Cities   : PART III: Chapters 6 to 9
20. Report Writing

Required Reading
1. K.S. Ramamurthy (Ed.)   : Seven One-Act Plays (OUP)
2. Dickens, C. (Retold by P. Atkinson): A Tale of Two Cities (Macmillam)
3. Murphy, Raymond   : Essential English Grammar (CUP)

Sem - IV   Hrs/ Week: 7
07UMA426   Credit: 6

ALGEBRA I

Objectives
1. To give an introductory knowledge of the basic abstract systems of mathematics
2. To train the students to generalize the known concepts
3. To develop analytical thinking

UNIT I
Groups and Sub Groups
Groups-definition and examples-abelian groups properties of groups -equivalent conditions-permutation groups -subgroups -centre -normaliser
(Chapter 3 sec 3.1 to 3.5)

UNIT II
Cyclic Groups and Cosets
Cyclic groups - properties- order of an element cosets - Lagrange's theorem - Euler's theorem - Fermat's theorem (chapter 3 sec 3.6 to 3.8)

UNIT III
Normal Subgroups and Isomorphism
Normal subgroups - properties - quotient group isomorphism - Cayley's theorem - homomorphism - automorphism fundamental theorem of homomorphism
(Chapter 3 sec 3.9 to 3.11)

UNIT IV
Rings
Rings - definition and examples - properties - ring isomorphism - different types of rings - characteristic of a ring (chapter 4 sec 4.1 to 4.5)

UNIT V
Subrings and Ideals
Subrings - ideals - quotient rings -maximal and prime ideals - homomorphism of rings
(Chapter 4 sec 4.6 to 4.10)

Books for Study
1. Arumugam.S and Thangapandi Isaac.A - Modern algebra SCITECH publications (India) PVT Ltd., Chennai edition   2003.

Books for Reference
1. I.N. Herstein - Topics in Algebra.
2. Gopala Krishnan - University Algebra.

Sem IV   Hours / Week : 4
07 UPH 472   Credits : 3

Allied: PHYSICS - II

Objectives:

- To understand the knowledge of nuclear bomb and X-ray studies.
- For the study of electrostatics, student acquire knowledge about forces in electric field and their applications.
- To understand the knowledge of magnetic field in various conducting media
- To know the information regarding lasers and fiber optics in communication system.
- To know the different types of digital instruments in various electronic devices and digital computer.

Unit I : MODERN PHYSICS

Liquid drop model – nuclear fission - nuclear fusion – atom bomb-photo electric effect – Einstein's photo electric equation – experimental verification – Compton effect –theory – X-ray diffraction – Bragg's law – Bragg's X-ray spectrometer – structure of KCl and NaCl crystal – Sommerfeld relativistic atom model.

Unit II : ELECTROSTATICS

Gauss law - proof – force between two point charges in vacuum – applications of Gauss law - electric field due to a line charge, an infinite plane sheet of charge , infinite charged conducting plate, charged spherical shell and charged sphere –Coulomb's law from Gauss law – capacitors – parallel plate capacitor with dielectric and dielectric with varying thickness.

Unit III : MAGNETISM AND CURRENT ELECTRICITY

Magnetizing field - intensity of magnetization - flux density – deflection magnetometer – Tan A and Tan B simultaneous method – vibration magnetometer – absolute determination of M and H – hysteresis – energy loss in hysteresis - Ampere's law – Biot – Savarts law – magnetic field due to straight conductor carrying current – magnetic field on the axis of a circular coil carrying current – magnetic field due to a solenoid – force between two parallel conductors – Post Office Box – Potentiometer – principle and measurement of resistance and current..

Unit IV : LASERS AND FIBER OPTICS

Atomic excitation-excitation by absorption-induced absorption-spontaneous absorption-spontaneous and induced emission-optical pumping-Ruby laser-He-Ne laser-applications of lasers-fiber optics-propagation of light in various media and in optical fiber- optical fiber and total internal reflection-numerical aperture-fiber optic communication-advantages –telephone system and optical fiber .

Unit V : DIGITAL ELECTRONICS

Binary number system – conversion of binary in to decimal, decimal in to binary - logic gates and Universal gates – NAND and NOR as a Universal building block – Boolean algebra – De Morgan's theorem – flip flops: SR, Clocked SR, JK, D-type, and T-type – applications – introduction to digital computer.

Books For Study:

(1) A. S. Vasudeva - Modern Engineering Physics,S. Chand and Company   Ltd,.1988.
(2) Cyclostyled text

Unit	Book	Sections
I	1	2.2,2.3,5.4,6.10-6.13,9.10-9.13,9.17,15.7,15.8
II	1	2.2-2.5,3.1,3.2,3.7,3.8
III	1	3.2-3.4,3.15,3.16,1.2-1.4,1.7-1.10.
IV	1	8.2,8.3,8.8-8.15, 8.17, 8.20, 8.22, 8.24, 8.28, 8.34, 8.35
V	2	Cyclostyled Text

07 UPH 473   Hours / Week : 2
                                                             Credits : 4

Allied: PHYSICS PRACTICALS
(any 16 Experiments)

1.   Young's modulus – Non uniform bending – cantilever

2.   Young's modulus – Cantilever

3.   S .T. – Method of drops

4.   Viscosity – variable pressure hand

5.   Concave lens – f, R, μ.

6.   Air wedge – Thickness of wire.

7.   Newton' Rings R

8.   Spectrometer – Solid prism

9.   Spectrometer – Grating (Normal Incidence)

10. M_1/M_2 – Tan A and Tan B simultaneous method

11.   Absolute determination of M and H.

12.   P.O. Box – Temp. Coeffet

13.   Potentiometer – Ammeter calibration

14.   Potentiometer – R and ρ.

15.   Field along the axis of the coil

16.   Vibration of strings – Melde's

17.   Sonometer – Frequency.

18.   Junction diode and zener diode characteristics.

19.   Logic gates – IC's

20.   DeMorgans Theorems – Verification.

21.   S.T. – Capillary rise.

22.   Jolly's bulb

Sem-IV   Hours/Week: 6
07UCO472   Credits: 5

ALLIED: ACCOUNTS – II

Objectives
1. To impart basic knowledge of Partnership and Company Accounts.
2. To help the students to know the treatment of accounting in different situations.

Unit- 1
Partnership Accounts – Admission – Meaning of goodwill valuation of good will – treatment of goodwill – revaluation of assets and liabilities – new profit sharing ratio- capital accounts – balance sheet after admission.

Unit 2
Retirement and death of partners – Revaluation of Assets & Liabilities – Treatment of Goodwill – Closing of retiring Partner's capital a/c – Joint life policy – Balance Sheet after retirement and death.

Unit 3
Partnership accounts II – Dissolution – Realization account – Dissolution of firm- Insolvency of partners Garner Vs Murray- Piece meal distribution.

Unit 4
Company accounts- Principles of company accounts- issues of shares- Application – Allotment – Forfeiture – Reissue of Share.

Unit 5
Company final accounts with simple adjustments.

Text Book
1. TS Reddy & A Murthy, Financial Accounting, Margham Publications, Chennai,2006

References
1. Shukla MC, Grewal TS & Gupta SC, 2006 Advanced Accounts Volume I & II , S. Chand & Company Ltd., New Delhi.
2. R. L. Gupta & V. K. Gupta, 2006, Financial Accounting, Sultan Chand & Sons, New Delhi
3. R. L Gupta & M. Radhaswamy,2006, Advanced Accountancy , Volume I & II, Sultan Chand & Sons, New Delhi
4. S N Maheshwari & S K Maheshwari, 2005, Introduction to Accouncy, Vikas Publishing House Pvt. Ltd., New Delhi.

Sem - V   Hrs/Week: 6
07UMA527   Credit   : 5

ALGEBRA II

Objectives:
1. To extend the concepts learnt in Algebra I
2. To develop analytical thinking

Unit I: **Vector spaces**
Vector spaces - Definition and examples - Subspaces properties - Quotient space Linear transformations - Fundamental theorem of homomorphism - Span of a set.
(Chapter 5, Sec 5.1 to 5.4)

Unit II: Basis and Dimension
Linear Independence - Basis - Dimension - Properties - Rank and Nullity.
(Chapter 5, Sec 5.5 to 5.7)

Unit III: **Matrix and Inner product space**
Matrix of a linear transformation - Vector space of linear transformation - Inner product space - Definition and examples - Orthogonality - Gram Schmidt orthogonalisation process - Orthogonal Complement.
(Chapter 5, Sec 5.8, Chapter 6, Sec 6.1 to 6.3)

Unit IV: **Characteristic equation and bilinear forms**
Characteristic equation - Cayley Hamilton theorem - Eigen values and Eigen vectors - properties - Bilinear and Quadratic form
(Chapter 7, Sec 7.7, 7.8 Chapter 8, Sec 8.1, 8.2)

Unit V: **Lattices and Boolean Algebra**
Partially ordered sets - Lattices - Distributive and Modular lattices - Boolean Algebra.
(Chapter 9, Sec 9.1 to 9.5)

Books for Study
1. Arumugam. S and Thangapandi Issac. A - Modern Algebra - SCITECH Publications (India) Pvt. Ltd., Chennai. Edition 2003.

Books for Reference
1. I. N. Herstein - Topics in Algebra
2. Elliott Mendelsor - Theory and problems of Boolean Algebra and Switching Circuits.

Sem – V   Hrs/Week: 6
07UMA528   Credit: 5

REAL ANALYSIS

Objective
- To study the real number system and its properties
- To study the properties of functions defined on the Real line

Unit I:
Concepts of real numbers – Dedekind theories of irrational numbers – Definitions – Dedekind's theorem – Absolute value of real numbers – Elementary notion of bounds – Concepts of bounds from Dedekind's section.
(Chapter 1, sec., 1-5, pg. 1-19, Chapter 2, sec., 2.3, pg 30-34)

Unit II:
Limit of a function of one variable – Other kinds of limit – Theorems involving limits
(Chapter 4, sec., 4-6, pg. 90-115)

Unit III:
Notion of continuity – Classification of points of discontinuity – Properties of continuous function of one variable
(Chapter 4, sec., 7-9, pg. 115-148)

Unit IV:
Introduction – Definition of derivatives – Geometrical significance of derivatives – Continuity and existence of derivatives – Mean value theorems of differential calculus
(Chapter 6, sec., 1-4, 13, pg. 206-215, 260-280)

Unit V:
Riemann theory of integration of a bounded function – N and S condition for Reimann Integrabiltiy – Examples of Riemann integrable function – Mean value theorem for definite integrals – Fundamental theorem
(Chapter 7, sec., 4 & 8, pg. 312-318, 327-333, 344-352)

Books for Study
1. Chatterjee,S.K. – Mathematical Analysis (Real) OXFORD & IBH Publishing Co., Edition 1979.

Books for Reference
1. Shanthi Narayanan - Mathematical Analysis

Sem-V   Hrs/Week: 7
07UMA529   Credit   : 6

STATICS

Objectives:
   1. To provide a basic knowledge of the behaviour of various types of forces.
   2. To give them enough working knowledge to handle practical problems.

Unit I
Law of parallelogram of forces-Lami's theorem-Resolution of forces.
(Chapter 2 Sections 1-4 & 6-12 Pages: 9 to 16 & 17 to 51)

Unit II
Like Parallel forces-Unlike Parallel forces-Moments-Varignon's theorem of Moments-
Generalized theorem of Moments-Couples-Definition-equilibrium of couples-resultant of
coplanar couples.
(Chapter 3 Sections 1-13; Chapter 4 Sections 1-10 Pages: 52-78 & 84-97)

Unit III
Equilibrium of three forces acting on a rigid body-three coplanar forces-conditions of
equilibrium-Coplanar forces-Reduction of coplanar forces-Equation to the line of action of
the resultant.
(Chapter 5 Sections 1-6; Chapter 6 Sections 1-9 Pages: 98 to 122 &143-167)

Unit IV
Forces of Friction-Laws of Friction-Limiting Friction-Limiting equilibrium-Cone of Friction-
Angle of Friction.
(Chapter 7 Sections 1-13 Pages: 206-234)

Unit V
Equation to Common Catenary-Tension at any point-Geometrical properties of Common
Catenary.
(Chapter 11 Sections1-6 Pages: 375-391)

Books for Study
1. Statics - Venkataraman M.K: Agasthiar Publishers.

Books for Reference
1. Statics - V.Dharmapadham
2. Statics - S.Narayanan

Sem V   Hrs/week: 7
07UMA530   Credits   : 6

DISCRETE MATHEMATICS

Objectives
  1. To introduce graph theory and coding theory which has applications in computer algorithms.
  2. To introduce automata formal languages which has applications in compiling techniques and complexity theory.

UNIT I
Definition of a graph - incidence and degree - sub graphs - isomorphism - special classes of graphs - paths, cycles and connectedness - adjacency matrix and incidence matrix of a graph (Chapter XI, pages 11.1-11.39).

UNIT II
Trees - properties of trees - centers in a tree - spanning trees - Cayley's formula - Kruskal's and Prim's algorithm for minimum spanning tree - shortest path problem - directed and binary trees (Chapter XI, Pages 11.54 -11.84).

UNIT III
Eulerian and Hamiltonian graphs - Traveling salesman problem - planer graphs
(Chapter XI, pages 11.102 - 11.112, 11.126 - 11.130).

UNIT IV
Finite automata - language accepted by finite automata - Non-deterministic finite automata - equivalence of FA and NFA - properties of regular sets - pumping lemma for regular sets (Chapter XII, Articles 1 -12 Pages 12.1 - 12.28).

UNIT V
Phrase - Structure grammar - Chomsky hierarchy - finite automata and regular sets - derivation trees - Chomsky normal form.(Chapter XII, Articles 16 to 20 Pages 12.43 -12.67)

Books for Study
 1. Discrete mathematics by Dr.M.K.Venkatraman, N.Sridharan and N.Chandrasekaran, The National Publishing Co, Chennai, 2000.

Books for Reference
1. Narsingh Deo: Graph Theory with applications to Engineering and Computer science, Prentice Hall of India, New Delhi(2001).
2. Koleman and Busby - Discrete Mathematical Structures, Prentice Hall of India,   New Delhi, 2002.

Sem V   Hrs/Week: 7
07UMA531   Credits   : 6

ASTRONOMY

Objectives
1. To introduce the exciting world of astronomy to the students.
2. To help the students to study about the celestial objects.

UNIT I
Relevant properties of sphere and formulae in spherical trigonometry (no proof, no problems) Celestial sphere and diurnal motion -Celestial coordinates-sidereal time.   (Sec: 39-79)

UNIT II
Morning and evening stars -circumpolar stars- diagram of the celestial sphere -zones of earth-perpetual day-dip of horizon-twilight. (Sec: 80-90,106-116)

UNIT III
Refraction - laws of refraction -tangent formula-cassini's formula -horizontal refraction-geocentric parallax -horizontal parallax. (Sec: 117-144)

UNIT IV
Kepler's laws - verification of laws - 1 and 2 in the case of earth - Anomalies -Kepler's equation - Seasons -causes -kinds of years. (Sec: 146-162,173-178)

UNIT V
Moon-sidereal and synodic months -elongation -phase of moon -eclipses-umbra and penumbra - lunar and solar eclipses-ecliptic limits -maximum and minimum number of eclipses near a node and in a year - saros. (Sec: 229-241,256-275)

Books for Study
1. Kumaravel, S. and Susheela Kumaravel: Astronomy, 8th Edition, 1993.

Books for Reference
1. Ramachandran, Text Book of Astronomy
2. Subramani Aiyar. H., Text Book on Astronomy (1970).

Sem VI   Hrs/ Week: 6
07UMA631   Credit   : 5

COMPLEX ANALYSIS

Unit I
Analytic functions: Continuous functions - Differentiability - Cauchy-Riemann Equation - Harmonic Fuctions.
(Chapter II, Sections 2.4-2.8, page 30-67)

Unit II
Mapping: Conformal mapping - Bilinear transformations - Cross ratio.
(Chapter II, Section 2.9, Chapter III, Section 3.2-3.4, page 67-75, 82-94)

Unit III
Complex Integration: Definite Integral - Cauchy' theorem - Cauchy's integral formula - Higher derivatives.
(Chapter VI, Section 6.6.0-6.4, page 132-172)

Unit IV
Series expansions: Taylor's series - Laurent's series - Zeros of analytic functions - singularities.
(Chapter VII, Section 7.0-7.4, page 173-208)

Unit V
Calculus of Residues: Residues - Cauchy's Residue Theorem - Evaluation of definite Integrals (poles not lying on the real axis)
(Chapter VIII, Section 8.0-8.3, page 209-255)

Books for Study
1. S. Arumugam, A. Thangapandi Issac, A. Somasundaram : " Complex Analysis", Scitech Publications (India) Pvt. Ltd.

Books for Reference
1. Narayanan, Manicavachagom Pillai, "Complex Analysis", S. viswanatha (printer and publishers) Pvt. Ltd.
2. P. Duraipandian, Laxmi diraipandian, D. Muhilan, " Complex Analysis", Emerald Publishers, Revised Edition (2001).
3. Murray R. Spiegel, "Theory and problems of Complex Variables", Schaum Outline Series - McGrow Hill Book Company.

Sem-VI   Hrs/Week: 6
07UMA632   Credit   : 5

OPERATIONS RESEARCH

Objectives
1. To introduce the various techniques of research.
2. To make students solve real life problems in Business and Management.

Unit I
Linear programming problem-Mathematical formulation-Graphical solution-Canonical and standard forms-simplex method-Big M method-Two phase method-advantages and limitations of Linear programming.
(Chapter 2 Sec 2.1 to 2.6, Chapter 3 Sec 3.1, 3.5)

Unit II
Dual problems-Solution using duality-Dual simplex method-Integer programming-Gomory's cutting plane method-Mixed integer method.
(Chapter 4 Sec 4.1, 4.2, 4.5, 4.6, Chapter 11 Sec 11.2, 11.3)

Unit III
Transportation problems-Northwest Corner rule-Least cost method -Vogel's
Approximation method - Unbalanced transportation problems-Maximization in transportation problems-Assignment problem-Solution-Maximization in assignment problems.
(Chapter 6 Sec 6.1 to 6.9, Chapter 7 Sec 7.1 to 7.4)

Unit IV
Queuing system - Kendal's notation - (M/M/1) (∞/FIFO), (M/M/C) (∞/FIFO), (M/M/1) (N/FIFO) - Two person zero sum games saddle point - Mixed strategies graphical method.
(Chapter 9 Sec 9.1 to 9.3, 9.5, 9.6, Chapter 17 Sec 17.1 to 17.4, 17.8)

Unit V
PERT and CPM-Rules for constructing network-Network computations -Floats-PERT - Inventory models-Purchasing Models with no shortages-Manufacturing model with no shortages.
(Chapter 21 Sec 21.1 to 21.7, Chapter 18 Sec 18.6 (Case 1 and Case 3 only)

Books for Study
1. Kanti Swarup-Gupta-ManMohan: Operations Research-Seventh edition 1994

Books for Reference
1. Sundaresan. V, Ganapathy Subramanian. K. S and Ganesan: Operations Research, A.R.Publications, Sirkali. New revised edition.
2. Handy Taha-Operations Research

Sem - VI   Hrs/ Week: 6
07UMA633   Credit   : 5

DYNAM ICS

Objectives
1. To provide a basic knowledge of the behaviour of objects in motion.
2. To develop a working knowledge to handle practical problems.

Unit I

Motion in a plane without air resistance-path of a projectile-Time of flight-Horizontal range-Motion of a projectile up an inclined plane.[Sections 6.1 to 6.10,6.12 to 6.16]

Unit II

Fundamental laws of impact - Impact of a smooth sphere on a fixed smooth plane - Direct impact of smooth elastic spheres - oblique impact of smooth elastic spheres.[Sections 8.1 to 8.11]

Unit III

Definition - Geometrical representation of S.H.M.-Composition of S.H.M.'S of the same period and in the same line - Composition of S.H.M.'S of the same period and in two perpendicular directions. [Sections 10.1 to 10.8]

Unit IV

Radial and transverse components of velocity and acceleration - Differential equation of a central orbit- Given the orbit to find the law of force - Given the law of force to find the orbit. [Sections 11.1 to 11.13]

Unit V

       Kinetic Energy - Angular momentum - Equation of motion - Conservation of angular momentum - Principle of energy - Compound pendulum - Centers of suspension and oscillation. [Sections 13.1 to 13.8]

Note:
50% of the question paper should be book works and 50% of the questions may be problems.

Books for Study
1. Dynamics - Dr.M.K.Venkataraman
   Unit 1 - Chapter 6, Unit 2 - Chapter 8, Unit 3 - Chapter 10, Unit 4 - Chapter 11, Unit 5 - Chapter 13.

Books for Reference
1. Dynamics - V. Dharmapatham.
2. Dynamics - M.L. Khanna.

Sem VI   Hrs/Week: 5
07UMA634   Credits   : 4

COMPUTER ORIENTED NUMERICAL METHODS WITH 'C'

Objectives
1. To introduce the techniques of C programming.
2. To solve numerical problems using C.

Unit I
Structure of C programs-Constants, Variables and Data types-Operators and Expressions-Mathematical functions-Input and output operators. (Chapters 1-4)

Unit II
Decision making and Branching-IF statements-GOTO statement-Decision making and looping- WHILE, DO, FOR statements-Arrays (Chapters 5-7)

Unit III
Handling of character strings-Arithmetic operations on characters-String handling functions-User defined functions-Recursion. (Chapters 8-9).

Unit IV
Curve fitting-Linear and parabolic curves by the method of least squares principle-Solving algebraic and transcendental equations-Bisection method, false position method and Newton Raphson method-Solving simultaneous algebraic equations-Gauss- Seidal method-Gauss elimination method. (Chapter 1, Sections 1.7-1.8, Chapter 3, Sections 2, 4 and 5, Chapter 4, Sections 2, 6)

Unit V
Interpolation-Newton's forward and backward difference formulae-Lagrange's interpolation formula-Numerical integration using Trapezoidal and Simpson's one-third rules-solution of ODE s-Euler method and Runge-Kutta fourth order method (Chapter 6,Sections 3,4,Chapter 8,Section 4,Chapter 9,Sections 8,10,Chapter 11,Sections 10,16)

Note:
For Numerical methods: Problems and Programs only.

Books for Study
1. Balagurusamy. E: Programming in ANSI C (Second edition)
   a. (For Units I, II and III).
2. M. K. Venkatraman: Numerical methods in Science and Engineering. (Fifth edition) (For Units IV, V).

Books for Reference
1. Yashavant.P.Kanetkar: Let us 'C'.
2. Rajaraman: Computer oriented numerical methods.

Sem VI   Hrs/Week: 2
07UMA635   Credits   : 2

COMPUTER LAB (C-PROGRAMMING)

Objectives

1. To train the students to run simple C programs.
2. To solve numerical problems using C.

List of Practical

1. Finding the mean and S.D. of n values.
2. Finding Correlation coefficients.
3. Arranging n numbers in ascending order and   finding the median value.
4. L.C.M. AND G.C.D. of two numbers.
5. Prime number Checking.
6. nC_r and nP_r using functions subprogram.
7. Fibonacci's series.
8. Finding cos x and sin x from series expansions.
9. Arranging the names in alphabetical order.
10. Matrix addition, subtraction and multiplication.
11. Palindrome verification.
12. Solving quadratic equations.
13. N-R-Bisection method-False position method of solving equations.
14. Gauss elimination method-Gauss-Seidal method of solving simultaneous equations.
15. Trapezoidal rule, Simpson's rule of integration.
16. R.K.Fourth order method of solving differential equations.
17. Lagrange's method of interpolation.

ELECTIVES OFFERED BY VARIOUS DEPARTMENTS FOR
UG COURSES

Sem	Code No.	Title of the Paper	Hours	Credits
Department of Business Administration				
IV	07UBU481	Soft Skills Development	4	3
V	07UBU582	Advertisement and Sales Promotion	4	3
VI	07UBU683	Personal Growth Programme	4	3
Department of Chemistry				
IV	07UCH481	Food and Nutrition	4	3
V	07UCH582	Everyday Chemistry	4	3
VI	07UCH683	Soil Testing	4	3
Department of Commerce				
IV	07UCO481	Elements of Business Process Outsourcing (BPO)	4	3
	07UCO482	Accounts for Executives	4	3
V	07UCO583	Soft Skills Development	4	3
	07UCO584	Fundamentals of Investment Management	4	3
VI	07UCO685	Small Scale Business Development	4	3
	07UCO686	Hotel Management	4	3
Department of Computer Science				
IV	07UCS481	Office Automation	4	3
	07UCS482	Internet Concepts	4	3
V	07UCS583	Fundamentals of Computer Networks	4	3
	07UCS584	Information Technology	4	3
VI	07UCS685	E-Commerce	4	3
	07UCS686	Foundations of Computer Science	4	3
Department of Computer Application (BCA) (SFS)				
IV	07UCA481	Personal Soft Skills	4	3
Department of Economics				
IV	07UEC481	Indian Economy	4	3
V	07UEC582	Tamil Nadu Economy	4	3
VI	07UEC683	Economics of Social Issues	4	3
Department of Electronics				
IV	07UEL481	Computer Electronics	4	3
V	07UEL582	Radio and Television	4	3
VI	07UEL683	DVD Player Assembling and Troubleshooting	4	3

Department of English

IV	07UEN481	English for Competitive Exams	4	3
	07UEN482	Film Studies	4	3
V	07UEN583	English for Communication	4	3
	07UEN584	Public Speaking in English	4	3
VI	07UEN685	English of Literature	4	3
	07UEN686	English for Empowerment	4	3

Department of History

IV	07UHS481	Tourism and Travel Agency	4	3
V	07UHS582	Tourism and Automation	4	3
VI	07UHS683	Indian History for Competitive Examinations	4	3

Department of Mathematics

IV	07UMA481	Mathematics for Competitive Examinations	4	3
V	07UMA582	Graph Theory	4	3
VI	07UMA683	Operations Research	4	3

Department of Physics

IV	07UPH481	Everyday Physics	4	3
V	07UPH582	Photography	4	3
VI	07UPH683	Cell Phone Servicing	4	3
	07UPH684	Electrical Wiring	4	3

Department of Plant Biology & Plant Biotechnology

IV	07UBO481	Mushroom Culture	4	3
V	07UBO582	Everyday Biology	4	3
VI	07UBO683	Remote Sensing	4	3

Department of Statistics

IV	07UST481	Statistics for Management	4	3
V	07UST582	Data Analysis for Competitive Examination	4	3
VI	07UST683	Actuarial Statistics	4	3

Department of Tamil

IV	07UTA481	மைய அரசுப்பணித்தேர்வுத் தமிழ்	4	3
V	07UTA582	தமிழ் இலக்கியத்தில் மனித உரிமைகள்	4	3
VI	07UTA683	சித்த மருத்துவம்	4	3
VI	07UTA684	மக்கள் தகவல் தொடர்பியல்	4	3