Dr.M.G.R
Educational and Research Institute
UNIVERSITY
(Decl.U/S 3 of the UGC Act 1956)

Maduravoyal, Chennai

Department of Mathematics

B.Sc – Mathematics (Full Time)

Curriculum and Syllabus

2017 Regulation

Dr.M.G.R.
EDUCATIONAL AND RESEARCH INSTITUTE
UNIVERSITY
(Decl. U/S 3 of the UGC Act 1956)
DEPARTMENT OF MATHEMATICS

B.Sc Mathematics (Full Time)
Curriculum and Syllabus
2017 Regulation

S.No	Sub. Code	Title of Subject	L	T	P	C
		I SEMESTER				
1		Language – Paper I	3	0	0	3
2		English – Paper I	3	0	0	3
3	HBMA17001	Algebra	3	1	0	4
4	HBMA17002	Analytical Geometry & Trigonometry	3	1	0	4
5		Allied I – Allied Physics I	3	1	0	4
6		Environmental Studies	3	0	0	3
TOTAL			**18**	**3**	**0**	**21**

S.No	Sub. Code	Title of Subject	L	T	P	C
		II SEMESTER				
1		Language – Paper II	3	0	0	3
2		English – Paper II	3	0	0	3
3	HBMA17003	Calculus-I	3	1	0	4
4	HBMA17004	Differential Equations and Fourier Series	3	1	0	4
5		Allied I – Allied Physics II	3	1	0	4
6		Entrepreneurial Development	3	0	0	3
TOTAL			**18**	**3**	**0**	**21**

T. Johnn
(HOD | Maths)
05.6.17

B.Sc - Mathematics - 2017 Regulations

APPROVED BY XXVII ACADEMIC COUNCIL MEETING HELD ON 21.06.2017

JOINT REGISTRAR

Prof. Dr. S. DINAKARAN
JOINT REGISTRAR
Dr. . . .
Educational and Research Institute
University
(Decl. u/s.3 of UGC Act, 1956)
Periyar E.V.R. High Road
Maduravoyal, Chennai-600 095.

III SEMESTER

S.No	Sub. Code	Title of Subject	L	T	P	C
1	HBMA17005	Algebraic Structures	3	1	0	4
2	HBMA17006	Multivariate Calculus & Theory of Numbers	3	1	0	4
3	HBMA17007	Calculus II & Integral Transforms	3	1	0	4
4	HBMA17008	Mathematical Statistics	3	1	0	4
5		Allied II – Allied Computer Science I	3	1	0	4
6		Soft Skills I	2	0	0	2
TOTAL			**17**	**5**	**0**	**22**

IV SEMESTER

S.No	Sub. Code	Title of Subject	L	T	P	C
1	HBMA17009	Linear Algebra	3	1	0	4
2	HBMA17010	Real Analysis I	3	1	0	4
3	HBMA17011	Numerical Methods	3	1	0	4
4	HBMA17012	Discrete Mathematics	3	1	0	4
5		Allied II – Allied Computer Science II	3	1	0	4
6		Soft Skills II	2	0	0	2
TOTAL			**17**	**5**	**0**	**22**

P. John
(HOD /Maths)
25-6-17

S.No	Sub. Code	V SEMESTER Title of Subject	L	T	P	C
1	HBMA17013	Real Analysis II	3	1	0	4
2	HBMA17014	Mechanics	3	1	0	4
3	HBMA17015	Operational Research I	3	1	0	4
4	HBMA17016	Financial Mathematics	3	1	0	4
5		Elective I	3	0	0	3
6		Elective II	3	0	0	3
TOTAL			18	4	0	22

S.No	Sub. Code	VI SEMESTER Title of Subject	L	T	P	C
1	HBMA17017	Complex Analysis	3	1	0	4
2	HBMA17018	Operational Research II	3	1	0	4
3	HBMA17019	Fuzzy set theory	3	1	0	4
4	HBMA17L01	Project	0	0	10	10
TOTAL			9	3	10	22

S.No	Sub. Code	List of Electives Title of Subject	L	T	P	C
1	HBMA17E01	Fluid Dynamics	3	0	0	3
2	HBMA17E02	Mathematical Modeling	3	0	0	3
3	HBMA17E03	Applications of P.D.E, and Special Functions	3	0	0	3
4	HBMA17E04	Introduction to Mathematica	2	0	1	3
5	HBMA17E05	Graph Theory	3	0	0	3
6	HBMA17E06	Astronomy	3	0	0	3

Total No. Of Credits: 130

(HOD /maths)
15.6.17

B.Sc - Mathematics - 2017 Regulations

Dr.M.G.R
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UNIVERSITY
(Declared U/S 3 of the UGC Act 1956)

B.B.A., BCA., B.Sc., B.Com முதல் பருவம்

நோக்கம்:

➢ வாய்மொழி இலக்கியத்தையும் செய்யுள் இலக்கியத்தையும் அறிந்து கொள்ளல்
➢ சிறுகதை மரபினைப்புரிந்து கொள்ளல்
➢ பிழைஇன்றித்தமிழ் எழுதுவதற்கு அடிப்படை இலக்கணத்தைப்பயிற்றுவித்தல்
➢ கவிதை மரபினையும் சிறுகதை மரபினையும் வரலாற்று நிலையிலிருந்து விளக்குதல்

தமிழ் - தாள் I

அலகு – 1

1. தாலாட்டு
2. காதல்
3. ஒப்பாரி
4. காணிநிலம் வேண்டும் - பாரதி
5. நல்லதோர் வீணை – பாரதி
6. தமிழ்க்காதல் - பாரதிதாசன்
7. தமிழ்வளர்ச்சி – பாரதிதாசன்
8. எந்நாளோ? – பாரதிதாசன்
9. ஆறு தன் வரலாறு கூறுதல் - கவிமணி தேசிய விநாயகம் பிள்ளை

அலகு – 2

1. வழித்துணை – ந.பிச்சமூர்த்தி
2. குருடர்களின் யானை – அப்துல்ரகுமான்
3. முள் முள் முள் - சிற்பி

அலகு -3 புதுமைப்பித்தன் கதைகள்

1. கடவுளும் கந்தசாமிப் பிள்ளையும்
2. செல்லம்மாள்
3. துன்பக்கேணி
4. ஆற்றங்கரைப் பிள்ளையார்
5. ஒருநாள் கழிந்தது

அலகு – 4

1. பெயர், வினை, இடை, உரிச்சொற்களின் பொது இலக்கணம், வலிமிகும் இடங்கள், வலிமிகா இடங்கள்.

அலகு – 5

1. தமிழ்க் கவிதையின் தோற்றமும் வளர்ச்சியும்
   (மரபுக்கவிதை, புதுக்கவிதை)
2. தமிழ்ச்சிறுகதையின் தோற்றமும் வளர்ச்சியும்
   மரபுத் தொடர்கள், பொருந்தியசொல் தருதல் கலைச் சொற்கள், நேர்காணல்

Prof. Dr. S. DINAKARAN
JOINT REGISTRAR
Dr. M.G.R.
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Maduravoyal, Chennai-600 095

மேற்பார்வை நூல்கள்:

Vice Chancellor

Dr. M.G.சென்னைப் பல்கலைக்கழக வெளியீடு – 2013
...பொதுஇலக்கணம்.

UNIVERSITY
Periyar E.V.R Road.

தமிழ்த்துறைத் தலைவர்
டாக்டர் எம்.ஜி.ஆர்.
கல்வி மற்றும் ஆராய்ச்சி நிறுவனம்
பல்கலைக்கழகம்
மதுரவாயல், சென்னை - 600 095

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BHI13001   **HINDI – 1**   3   0   0   3

Prose, Administrative Hindi and Grammer.

UNIT I

9 Hrs

1. Sabhyata kaa rahasya – lesson and annotations ,Questions & answers,
2. Administrative terms (Prayojan mulak Hindi)

UNIT II

9 Hrs

1. Mitratha ka rahasya – lesson and annotations questions and answers
2. Patra lekhan, definitions, correspondence in hindi

UNIT III

9 Hrs

1. Paramanu oorja evam and kadhya sanrakshan (lesson) annotations and answers,
2. Technical terms and words, letter writing

UNIT IV

9 Hrs

1. Yuvavon se (lesson), annotations, essay and questions and answers
2. Types of official correspondence, technical terms
3. Grammer(Change of voice, correcting the sentences)

UNIT V

9 Hrs

1. Yogyata aur vyavasay ka chunav (Lesson) essay, questions and answers
2. Letter writing
3. grammer & technical terms

Total no of Hrs: 45

REFERENCES

- Dr. Syed Rahmatullah & Poornima Prakashan, *Hindi gadhya maala*
- Dr. Syed Rahmatullah & Poornima Prakashan, *Prayojanmulak Hindi*
- Dakshin Bharat Hindi Prachara Sabha, T.Nagar, *Saral Hindi Vyakaran-2*

Syllabus for French

Semester I – French - I

Unit 1

Découvrir la langue française

- Se présenter, dire si on comprend, présenter une personne, nommer les choses, savoir vivre, comprendre la grammaire

Unit 2

Faire connaissance

- Donner des informations sur une personne, demander, exprimer ses préférences, parler de son travail, parler de ses activités, parler de son pays, de sa ville

Unit 3

Organiser son temps

- Dire la date, dire l'heure, donner des informations sur un emploi du temps, proposer-accepter-refuser, interroger-répondre, faire un programme d'activités

Unit 4

Découvrir son environnement

- S'orienter, Situer, Se loger, Exprimer la possession, Connaître les rythmes de vie, Fixer des règles

Unit 5

S'informer

- Dire ce qu'on fait, S'informer sur un emploi du temps passé, Expliquer, Exprimer la doute ou la certitude, Découvrir les relations entre les mots, Savoir s'informer

Recommended book :

Campus 1 – méthode de française by Jacky Girardet, Jacques Pécheur

13|06|2017

S. MANIMEGALAI

Dr. M.G.R.
Educational and Research Institute
University
(Declared as Deemed to be university u/s.3 of UGC Act 1956)
Maduravoyal, Chennai - 95
(An ISO 9001 : 2008 Certified Institution)

Faculty of Humanities and Science
Department of English
Syllabus for English
Semester I Paper I
Common to All UG Courses (H&S)

(i.e. B.B.A., B.C.A.(General), B.C.A.(Animation & Multimedia), B.Com. (General), B.Com. (A&F), B.Com. (C.S), B.Sc. (Comp. Sci.), B.Sc. (I.Sc.& Cyber Forensics), B.Sc.Comp.,(Science & Networking), B.Sc. (Electronics), B.Sc. (Media & Vis. Com.), B.Sc. (Bio.Tech), B.Sc. (Maths), B.Sc. (Physics), B.Sc. (Chemistry) etc)

Proposed for implementation from the Academic Year 2017-2018

Code: HBEN15001

LTPC

3 0 0 3

UNIT I

Prose: Literary Melodies. (Orient Black Swan)

UNIT II

Poetry: Literary Melodies (Orient Black Swan)

UNIT III

Short Stories: Literary Melodies (Orient Black Swan)

UNIT IV

One Act Plays: Literary Melodies (Orient Black Swan)

UNIT V
Functional English

Total: 45 Periods

From the Academic Year 2017-2018

COURSE OBJECTIVES:

1. to prepare students for attaining a comprehensive knowledge of the communication skills
2. to make them understand the nuances of the language and use its vocabulary in appropriate contexts
3. to develop in students a knowledge of the various techniques in language use
4. to develop in them analytical and interpretative skills
5. to train learners in organized academic and business writing

Unit I-PROSE- For Detailed Study

1.	On Running After One's Hat	G.K. Chesterton
2.	The Unexpected	Robert Lynd
3.	How to be a Doctor	Stephen Leacock

Unit II- POETRY- For Detailed Study

1.	Ulysses	Lord Tennyson
2.	If	Rudyard Kipling
3.	Leave this Chanting and Singing	Rabindranath Tagore

Unit III- SHORT STORY

1. A Retrieved Reformation	O'Henry
2. Engine Trouble	R.K. Narayan

Unit IV – GLIMPSES FROM GREAT MINDS

1.	I lived with words	R.L. Stevenson
2.	My Vision for India	Dr. APJ Abdul Kalam

Unit V - FUNCTIONAL ENGLISH

Enhancing LSRW Skills through Tasks

Note: Each lesson to be followed by text-based Vocabulary, Grammar, and Usage Exercises

Synonyms, Antonyms- Affixes (prefixes & Suffixes)-Noun- Adjectives, Verb, Tense, Adverb, Preposition, 'if' clause, Articles, discourse markers, Reported and Direct speech- Voice, Degrees of comparison, Interrogatives Comprehension, Précis writing

HEAD DEPARTMENT OF Li...

COURSE LEARNING OUTCOME:

Students completing the General English course

1. will be able to attain comprehensive knowledge of the four skills of communication viz.LSRW
2. will be able to understand the nuances of English Language as use its vocabulary in appropriate contexts
3. will have acquired the knowledge of the various techniques in language usage
4. will have acquired proficiency in analytical and interpretative skills
5. will be trained in organized and academic and business writing

Text Prescribed: Pushkala R, Padmasani Kannan, Chandrasena Rajeswaran, Anuradha V
Literary Melodies - Orient Black Swan, 2017

Text Books, Reference Books and Web Resources

1. Pushkala R, P.A.Sarada, El Dorado: A Textbook of Communication Skills, Orient Blackswan, 2014
2. Padmasani Kannan.S., Pushkala.R. : Functional English
3. Hancock, Mark, English Pronunciation in Use; Cambridge Univ. Press, 2013
4. McCarthy, Michael et.al,, English Vocabulary in Use, Advanced, Cambridge Univ. Press, 2011
5. Wren and Martin: Grammar and Composition, Chand & Co, 2006
6. Part I& Part II from Spring Board by Orient Black Swan Pvt. Ltd.
7. https://learnenglish.britishcouncil.org
8. www.englishpage.com
9. www.writingcentre.uottawa.ca/hypergrammar/preposit.himl
10. www.better-english.com/grammar/preposition.html
11. http://www.e-grammar.org/infinitive-gerund/
12. www.idiomsite.com/

Dr.M.G.R.
EDUCATIONAL AND RESEARCH INSTITUTE
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DEPARTMENT OF MATHEMATICS

HBMA17001   **ALGEBRA**   3 1 0 4

OBJECTIVES:
- ➤ To understand the basic concepts in Matrices
- ➤ To understand the basic concepts in Theory of Equations and Reciprocal equations.
- ➤ To understand the basic concepts in Transformation of equations and Summation of series.

UNIT I   MATRICES
Rank of a matrix – Consistency of a system of linear equations, Characteristic equation – Eigen values and Eigen vectors – properties – problems - Cayley –Hamilton theorem (statement only) and its applications – Diagnolisation of Matrices – Simple problems.

UNIT II   THEORY OF EQUATIONS
Polynomial equations – Imaginary and Irrational roots – Relation between roots and coefficients of equations – Symmetric functions of roots in terms of coefficients of third degree equation - Simple problems.

UNIT III   RECIPROCAL EQUATIONS
Sum of the powers of the roots of an equation – Newton's Theorem on the sum of the powers of the roots – Transformation of equations – Roots with sign changed – Roots multiplied by a given number – Reciprocal equations – Simple problems.

UNIT IV   TRANSFORMATION OF EQUATIONS
Increase or decrease the roots of a given equation by a given quantity. Removal of terms - Square of the roots – Transformations in general – Descarte's rule of signs – Simple problems.

UNIT V   SUMMATION OF SERIES
Summation of series using Binomial - Exponential and Logarithmic series (Theorems without proofs) - Approximation using Binomial & Exponential series.

                                            Total no. of hrs: 60

TEXT BOOKS:
1) Manicavachagom Pillay,T.K. Natarajan, T. Ganapathy, K.S (2004) *Algebra, Volume – I* ,S. Viswanathan Publishers.
2) Kandasamy, P Thilagavathy, K. (2004) *Mathematics, Volume – I (First Edition)*, S. Chand & Co,.

REFERENCE BOOKS:
1) Vittal, P.R. Malini, V. (2001) *Algebra, Analytical Geometry and Trigonometry - I Year – Paper I,* Margham Publications, Chennai.
2) Singaravelu, A (2003) *Algebra & Trigonometry*, Vol. I & II, Meenakshi Agency.

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DEPARTMENT OF MATHEMATICS

HBMA17002   **ANALYTICAL GEOMETRY & TRIGONOMETRY**   3 1 0 4

OBJECTIVES:
- To understand the basic concepts in Plane, Straight lines in Three dimensions
- To understand the basic concepts in Sphere, Cone and Cylinder in Three dimensions.
- To understand the basic concepts in Trigonometry.

UNIT I   PLANE AND STRAIGHT LINES
Straight lines – Co-planarity of straight-line-shortest distance (S.D) and equation of S.D between two lines – Simple problems.

UNIT III 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 CYLINDER
Cone whose vertex is at the origin - Envelope cone of a sphere - Right circular cone equation of a cylinder – Right circular cylinder

UNIT IV   TRIGONOMETRY I
Expansions of $\operatorname{Sin}n\theta$, $\operatorname{Cos}n\theta$ and $\operatorname{Tan}n\theta$ – Expansions of $\operatorname{Sin}\theta$, $\operatorname{Cos}\theta$ and $\operatorname{Tan}\theta$ in terms of θ – Hyperbolic functions.

UNIT V   TRIGONOMETRY II
Inverse hyperbolic functions and their properties – Logarithm of a complex number – General principal values – problems.

Total no. of hrs: 60

TEXT BOOKS:
1) Narayanan, S. Manicavachagom Pillay T.K (2010) *Analytical Geometry*, S.Viswanathan Publishers.
2) Bali, N.P (2005) *Solid Geometry*, Laxmi Publications (P) Ltd.
3) Narayanan, S. Manicavachagom Pillay T.K (2010) *Trigonometry*, S.Viswanathan Publishers.

REFERENCE BOOKS:
1) Khanna, M.L (2008) *Solid Geometry*, Jai Prakash Nath & Co Publishers.
2) Vittal, P.R (2003) *Coordinate Geometry*, Margham Publishers.
3) Duraipandian, P (2009), *Trigonometry*, Emerald publishers.
4) Narayanan, S. Manicavachagom Pillay T.K (2010) *Calculus Vol. II*, S.Viswanathan Publishers.

ALLIED PHYSICS - Paper - I

Unit -1 Heat and Sound

Conduction of Heat – Thermal Conductivity- Thermal Conductivity of bad Conductor- Lee's Disc Method- Radial Flow of Heat- Thermal Conductivity of glass and rubber.

Ultrasonic's-Production of Ultrasonic's- Piezo electric method-Magnetostriction Method-Properties- Applications.

Unit– 2 Fibre Optics and Laser

Fiber Optics- Introduction- Total internal reflection – Acceptance Angle and Numerical Aperture- classification of Optical Fibers- Step index and Graded index Fiber- Optical Fibre communication.

Laser: Spontaneous and Stimulated emission-Population Inversion- He-Ne Laser, CO_2 Laser- Semiconductor Laser- Applications.

Unit – 3 Magnetism

Basic concepts of magnetic materials – magnetic properties of Dia, para and Ferro magnetic materials – Area of (B-H) loop – electric and magnetic circuits – Curie temperature – applications of Ferrites in computer memory.

Unit – 4 D.C and A.C Circuits

DC Circuits: Introduction to electrical circuits, ohm's law, Kirchhoff's law, method of solving a circuits by Kirchhoff's laws, series and parallel connections- problems.

AC Circuits: Peak, Average and RMS values of ac current and voltage – LR circuits, CR circuits, LCR circuits, Resonance frequency- Power factor and Current values in an ac circuit.

Unit – 5 Nanomaterials and NDT

Nanomaterials: Definition- Classification- Properties- Types of synthesis method- Sol-gel method- Gas condensation Method- Chemical method- their Applications.

Non-Destructive Method: Definition-Liquid Penetrant Method-Ultrasonic Flaw detection Method-Applications.

Books for study:

1. Allied Physics- Dr.K. Thangaraj and Dr.D.Jeyaraman- Popular Book Depot.
2. Applied Physics for Engineering- Dr. V. Rajendran & Dr.A. Marikani- TATA McGRAM HILL
3. Electricity and Magnetism by N.S.Khare and S.S. Srivastava, Atma Raam & Sons, 10th Edition, New Delhi 1983).

Books for Reference:

1. Fundamentals of Physics by Resnick & Halliday
2. Engineering Physics-1 by Dr.D. Jayaraman
3. Materials Science by Dr.M. Arumugam- Anuratha Publications

HoD) Physics

ENVIRONMENTAL STUDIES

L	T	P	C
3	0	0	3

UNIT I ENVIRONMENT AND ECOSYSTEMS

Definition, scope and importance of environment – need for public awareness – concept, structure and function of an ecosystem – producers, consumers and decomposers – energy flow in the ecosystem. Biodiversity at National and local levels – India

UNIT II ENVIRONMENTAL POLLUTION

Definition – causes, effects and control measures of: (a) Air pollution (b) Water pollution (c) Soil pollution (d) Marine pollution (e) Noise pollution (f) Nuclear hazards (g) E-Wastes and causes, effects and control measures

UNIT III NATURAL RESOURCES

Forest resources: Use and over-exploitation, deforestation. Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems.

UNIT IV SOCIAL ISSUES AND THE ENVIRONMENT

From unsustainable to sustainable development – urban problems related to energy – water conservation, rain water harvesting, watershed management – resettlement and rehabilitation of people, its problems and concerns climate change, global warming, acid rain, ozone layer depletion, nuclear accidents ,central and state pollution control boards- Public awareness.

UNIT V HUMAN POPULATION AND THE ENVIRONMENT:

Population growth, variation among nations – population explosion, environment and human health – human rights – value education – HIV / AIDS – women and child welfare – role of information technology in environment and human health

TOTAL: 45 Hrs

PERIODS TEXT BOOKS: 1. Gilbert M.Masters, 'Introduction to Environmental Engineering and Science', 2nd edition, Pearson Education (2004). .

Benny Joseph, 'Environmental Science and Engineering', Tata McGrawHill,NewDelhi, (2006).

Approved in
Biotech BOS.
Rajeswary Hari

டாக்டர். எம்.ஜி.ஆர்.
கல்வி மற்றும் ஆராய்ச்சி நிறுவனம்
பல்கலைக்கழகம்
அடையாறுபட்டு, சென்னை – 600 095.

தமிழ்த்துறை
இரண்டாம் பருவம் ~ தமிழ்த்தாள்–11
பாடப்பகுதிகள்

அலகு–I

1. சிற்றிலக்கிய வரலாறு
2. கிறித்தவ இலக்கிய வரலாறு
3. இசுலாமிய இலக்கிய வரலாறு

அலகு–II

4. நந்திக் கலம்பகம்
5. முத்தொள்ளாயிரம்
6. தமிழ்விடு தூது

அலகு–III

7. திருக்குற்றாலக் குறவஞ்சி
8. முக்கூடற்பள்ளு
9. இயேசுபிரான் பிள்ளைத்தமிழ்

அலகு–IV

10. நளவெண்பா
11. சீறாப்புராணம்

அலகு– V

மொழிப்பயிற்சி : பண்புத்தொகை, வினைத்தொகை, உம்மைத்தொகை, உருவகம், உவமைத்தொகை, வேற்றுமைத்தொகை, அன்மொழித்தொகை, இருபெயரொட்டுப் பண்புத்தொகை.

ஒரு பொருள் குறித்த பலசொல், பல பொருள் குறித்த ஒரு சொல், அகரவரிசைப்படுத்துதல், ஒருமை, பன்மை மயக்கம், பிறமொழிச் சொற்களை நீக்குதல்.

பார்வை நூல்கள் :

1. சென்னைப் பல்கலைக்கழக வெளியீடு~2013
2. பொது இலக்கணம்

Vice Chancellor
Dr. M.G.R.
EDUCATIONAL AND RESEARCH INSTITUTE
UNIVERSITY

Prof. Dr. S. DIHAKARAN
JOINT REGISTRAR
Dr. M.G.R.
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Maduravoyal, Chennai-600 095

தமிழ்த்துறைத் தலைவர்
டாக்டர் எம்.ஜி.ஆர்.
கல்வி மற்றும் ஆராய்ச்சி நிறுவனம்
பல்கலைக்கழகம்
மதுரவாயல், சென்னை -600 095

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Educational and Research Institute
University

New Syllabus

Hindi – Semester II – Paper – II (Poetry, Hindi Computing, Alankar)

Unit – I

1. Poetry – VirPooja, Kaidi aur Kokila – Kavi Parichay, Annotation, Summary

    Makhanlal Chaturvedi

2. Poetry – Kabirdass – Sakhi – Kantasth 01 – 10 (Doha)

3. Alankar – Aupras and Upama only.

Unit – II

1. Poetry – Aansu, Shradha ka saundarya Annotation, Kavi Parichay, Summary

2. Poetry – Surdas – Two Padhya

Unit – III

1. Poetry – Subramaniya Bharathi – Nachenge – Hum Annotation, Kavi Parichay, Summary

2. Kaam Kaji Hindi Concept of Official Language and Hindi computing theory.

Unit – IV

1. Poetry – Galiv – Chunin da ser – Annotation, Summary, Kavi Parichay

2. Computer Internet in Hindi Latest tools and Packages

Unit – V

1. Kavi parichay, Jaishan kar Prasad, Subramaniya Bharathi and Mirzagalib, Makhanlalchaturvedi

2. Sesha Alankar

(RADHA RAMAKRISHNAN)

Syllabus for French

Semester II – French - II

Unit 1

Cultiver ses relations

- Recevoir, Communiquer, Parler des personnes, Donner des informations, écrire, être à l'aise avec les autres

Unit 2

Découvrir le passé

- Parler du passé, raconter les moments d'une vie, parler de la famille, préciser le moment de la durée, parler des habitudes et des changements, connaître quelques repères de l'histoire

Unit 3

Entreprendre

- Parler d'une entreprise, Exprimer un besoin, Parler du futur, Présenter les étapes d'une réalisation, Rapporter des paroles, Faire un projet de réalisation

Unit 4

Prendre des décisions

- Comparer des qualités, Comparer des quantités et des actions, Exprimer la ressemblance ou la différence, Faire des suppositions, Comparer des lieus, Parler de la télévision

Unit 5

Faire face aux problèmes

- Poser un problème, Caractériser une action, Parler de la sante, Interdire-Autoriser, Connaître la vie politique

Recommended book : Campus 1 – méthode de française by Jacky Girardet, Jacques Pécheur

P. M̄ 13/06/ 2017

P. MANINEGALAI

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Maduravoyal, Chennai - 95
(An ISO 9001 : 2008 Certified Institution) :

Faculty of Humanities and science
Department of English
Syllabus for English
Semester II Paper II
Common to All UG Courses (H&S)

i.e. B.B.A., B.C.A.(General), B.C.A.(Animation & Multimedia), B.Com. (General), B.Com. (AAF), B.Com. (C.S), B.Sc. (Comp. Sci.), B.Sc. (I.Sc.& Cyber Forensics), B.Sc.Comp.,(Science & Networking), B.Sc. (Electronics), B.Sc. (Media & Vis. Com.), B.Sc. (Bio.Tech), B.Sc. (Maths), B.Sc. (Physics), B.Sc. (Chemistry) etc)

Proposed for implementation from the Academic Year 2017-2018

Code: HBEN14002

L T P C

3 0 0 3

UNIT I

Prose   Literary Melodies: (Orient Black Swan)

UNIT II

Poetry   Literary Melodies (Orient Black Swan)

UNIT III

Short Stories Literary Melodies (Orient Black Swan)

UNIT IV

One Act Plays Literary Melodies (Orient Black Swan)

UNIT V

Functional English

HEAD DEPARTMENT OF ENGLISH
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SEMESTER II
FROM THE ACADEMIC YEAR 2017-2018

COURSE OBJECTIVES:
1. to prepare students to attain a comprehensive knowledge of the communication skills
2. to make them understand the nuances of the English language and use the vocabulary in appropriate contexts
3. to develop in students a knowledge of the various techniques in language usage
4. to develop in them analytical and interpretative skills
5. to train learners in organized, academic and business writing

Unit I- PROSE- For Detailed Study
1. Spoon Feeding   W.R. Inge
2. Disaster Management   B.M. Hegde
3. If You are Wrong Admit it   Dale Carnegie

Unit II – POETRY- For Detailed Study
1. Psalm of Life   H.W. Longfellow
2. Anthem for Doomed Youth   Wilfred Owen
3. Street Cries   Sarojini Naidu

Unit III – SHORT STORY
1. How Much Land does a Man Need?   Leo Tolstoy
2. Uncle Podger Hangs the Picture   Jerome K. Jerome

Unit IV – DRAMA
1. Excerpts from The Merchant of Venice   William Shakespeare
2. Monkey's Paw   W.W. Jacob

Unit V – FUNCTIONAL ENGLISH

Enhancing LSRW Skills through Tasks

Note: Each lesson to be followed by text-based Vocabulary, Grammar, and Usage Exercises

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Synonym and Antonym, Phrasal Verb- Idioms and Phrases, Collocation. Gerund and infinitives, Auxiliaries: Primary and Modals, Use of 'as soon as', 'No sooner .....than', 'Hardly had-when', 'Scarcely had-when', 'too....to', 'so...that'- Subject- Verb Agreement

Comprehension, note- making from an unknown passage, Expanding Hints into a meaningful paragraph, Essay writing

COURSE LEARNING OUTCOME:

Students completing the general English course

1. will attain advanced comprehensive knowledge of the four skills of communication viz. LSRW

2. will understand the nuances of English language as use its vocabulary in appropriate contexts

3. will acquire the advanced knowledge of the various techniques in language usage

4. will acquire advanced proficiency in analytical and interpretative skills

5. will get trained in organized academic and business writing

Text Prescribed: Pushkala R, Padmasani Kannan, Chandrasena Rajeswaran, Anuradha V Literary Melodies:, Orient Black Swan, 2017

Text Books, Reference Books and Web Resources

1. Pushkala R, P.A.Sarada, El Dorado: A Textbook of Communication Skills, Orient Blackswan, 2014
2. Padmasani Kannan.S., Pushkala.R. : Functional English
3. Hancock, Mark, English Pronunciation in Use; Cambridge Univ. Press, 2013
4. McCarthy, Michael et.al,, English Vocabulary in Use, Advanced, Cambridge Univ. Press, 2011
5. Wren and Martin: Grammar and Composition, Chand & Co, 2006
6. Part I& Part II from Spring Board by Orient Black Swan Pvt. Ltd.
7. https://learnenglish.britishcouncil.org
8. www.englishpage.com
9. www.writingcentre.uottawa.ca/hypergrammar/preposit.html
10. www.better-english.com/grammar/preposition.html
11. http://www.e-grammar.org/infinitive-gerund/
12. www.idiomsite.com/

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DEPARTMENT OF MATHEMATICS

BBMA17003   CALCULUS I   3 1 0 4

OBJECTIVES:
- To understand the basic concepts in Differential Calculus.
- To understand the concepts in Singular Integral and their properties, Multiple Integrals.
- To understand how to find area, surface area and volume using Multiple Integral

UNIT I   DIFFERENTIATION
Introduction to differentiation - Successive differentiation - nth derivative – Leibnitz formula for nth derivative of a product – Partial differentiation – Total differential Coefficient– Homogeneous functions – Euler's theorem.

UNIT II   MAXIMA AND MINIMA
Taylors Series, Jacobians, Maxima and minima of functions of Two variables – Lagrange's method of undetermined multipliers – simple problems.

UNIT III   INTEGRATION
Introduction to integration - Methods of integration – Integration by parts - Bernoulli's formula.

UNIT IV   PROPERTIES OF INTEGRATION
Properties of definite integrals – reduction formulae for standard integrals.

UNIT V   MULTIPLE INTEGRALS
Double Integrals - Change of order of Integration - Triple Integrals - Applications to Area, Surface Area and Volume.

Total no. of hrs: 60

TEXT BOOKS:
1) Narayanan, S. Manicavachagom Pillay T.K (2010) *Calculus Vol. I*, S.Viswanathan Publishers.
2) Narayanan, S. Manicavachagom Pillay T.K (2010) *Calculus Vol. II*, S.Viswanathan Publishers.

REFERENCE BOOKS:
1) Kandasamy, P. Thilagavathy, K (2004) *Mathematic for B.Sc. Vol.-I, II, III & IV*, S.Chand & Company Ltd.
2) Shanti Narayan (2001) *Differential Calculus*, Shyamlal Charitable Trust.
3) Shanti Narayan (2001) *Integral Calculus*, S.Chand & Co.
4) Vittal, P.R (2004) *Calculus*, Margham Publications.

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DEPARTMENT OF MATHEMATICS

BSMA17004   **DIFFERENTIAL EQUATIONS AND FOURIER SERIES**   3 1 0 4

OBJECTIVES:

- ➢ To understand the basic concepts in Ordinary Differential Equations.
- ➢ To understand the basic concepts in Partial Differential Equations.
- ➢ To understand the basic concepts in Fourier series.

UNIT I   ORDINARY DIFFERENTIAL EQUATIONS
First order but of higher degree equations - solvable for p, solvable for x, solvable for y, Clairaut's form - Simple problems.

UNIT II   HIGHER ORDER DIFFERENTIAL EQUATIONS
Second and Higher Order Differential Equations with Constant Coefficients – Second and Higher Order Differential Equations with Variable Coefficients - Method of Variation of Parameters - Simple Problems.

UNIT III   PARTIAL DIFFERENTIAL EQUATIONS
Formation of P.D.E by eliminating arbitrary constants and arbitrary functions - Complete Integral; Singular Integral; General Integral – Standard types $f(p,q) = 0$, $f(x,p,q) = 0$, $f(y,p,q) = 0$, $f(z,p,q) = 0$, $f(x,p) = f(y,q)$; Clairaut's form.

UNIT IV   HOMOGENEOUS LINEAR DIFFERENTIAL EQUATIONS
Lagrange's Equation- Method of grouping and multipliers - Homogeneous linear differential equation.

UNIT IV   FOURIER SERIES
Dirichlet's conditions – General Fourier series – Half range Sine & Cosine series – Complex form of Fourier series – Parseval's identity – Harmonic Analysis.

                                   Total no. of hrs: 60

TEXT BOOKS:

1) Narayanan, S. Manicavachagom Pillay T.K (2010) *Calculus Vol. III*, S.Viswanathan Publishers.

REFERENCE BOOKS:

1) Venkataraman, M.K (2001) *Engineering Mathematics Volume III*, The National Publishing Company.

B.Sc - Mathematics - 2017 Regulations

ALLIED PHYSICS - Paper - II

Unit – I Photoelectric effect & Matter waves

Photo electric effect – Einstein's photo electric equation – verification of Einstein's photo electric equation by Millikan's experiment – photo electric cells - applications - de Broglie matter waves – calculations of de Broglie wave length – Experimental study of de Broglie matter wave by G.P. Thomson experiment.

Unit – II Semiconductor Diodes and Transistors

Semiconductors- P-type and N-type semiconductors- Junction diode and Zener Diode- Junction Diode & Zener Diode Characteristics- Junction Diode as a rectifier- Zener diode as a voltage regulator - Transistor- characteristics- Transistor as an amplifier.

Unit - III Electronic Devices

Rectifiers: Half Wave and Full Wave rectifier- Efficiency-Capacitive Filter- Ripple Factor

Field Effect Transistor: Types- Junction Field Effect Transistor. Metal Oxide Semiconductor Field Effect Transistor-Characteristics- Silicon Control Rectifier- Characteristics.

Unit – IV Digital Electronics

Number system: Binary System, Decimal to Binary, Octal system, Hexadecimal system, Binary - Addition, Subtraction, Multiplication and Division.

Logic Gates: OR, AND, NOT, Exclusive-OR, NOR, NAND gates, Simple combinational logic circuits- Half adder, Full adder, BCD Adder.

Unit – V Operational Amplifier

Operational amplifier – OP-Amp – Inverting and non inverting amplifiers- Voltage amplifier., OP-Amp- Adder, Subtractor., OP- Amp comparator., OP-Amp Integrators.

Books for Study and Reference:
1. V.K. Metha- Principles of Electronics, S. Chand & Co.
2. R.S. Sedha- A Text book of Applied Electronics, S. Chand & Co.
3. B.L. Theraja- fundamentals of Electrical Engineering & Electronics, S. Chand & Co.
4. Applied Physics for Engineers- Dr. V.Rajendran & Dr.A. Marikani- TATA McGRAM HILL.

HOD | Physics

ENTERPRENEURIAL DEVELOPMENT	L T P C

Unit – I Concept of Entrepreneurship

Entrepreneurship – Meaning – Types – Qualities of an Entrepreneur – Classification of Entrepreneur – Factors influencing Entrepreneurship – Functions of Entrepreneurships.

Unit – II Entrepreneurial Development Agencies

Commercial Banks – District Industries Centre – National Small Industries Corporation – Small Industries Development Organisation – Small Industries Service Institute, All India Financial Institutions – IDBI – IFCI – ICICI – IRDBI.

Unit – III Project Management

Business idea generation techniques – Identification of Business Opprtunities – Feasibility study – Marketing, Finance, Technology and Legal Formalities – Preparation of project report – Tools of Appraisal.

Unit – IV Entrepreneurial Development Programmes

Entrepreneurial Development Programmes (EDP) – Role, relevance and achievements – Role of Governemnt in organisind EDPs – Critical Evaluation.

Unit – V Economic Development and Entrepreneurial Growth

Role of Entrepreneurs in Economic Growth – Strategic approaches in the changing Economic scenario for small scale Entrepreneurs – Networking. Niche play, Georgraphic Concentration. Franchising / Dealership – Development of Women Entrepreneurship.

Books:

1. *Dr. V. Balu – ENTREPRENEURIAL DEVELOPMENT*
2. *Dr. P.T. Vijayashree & Dr. M. Alagammai – ENTREPRENEURIAL DEVELOPMENT*

C.B. Sengl
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DEPARTMENT OF MATHEMATICS

BBMAI7005   **ALGEBRAIC STRUCTURES**   **3 1 0 4**

OBJECTIVES:
- To understand the basic concepts in Group theory.
- To understand the basic concepts in Ring theory.
- To understand the basic concepts in Ideals and Euclidean Rings

UNIT I GROUP THEORY
Group Theory: Groups – Subgroups – Counting Principle – Normal Subgroups.

UNIT II HOMOMORPHISMS
Homomorphisms – Automorphisms – Cayley's theorem – Permutation groups.

UNIT III RING THEORY
Ring Theory: Definition and examples of Rings – Some special classes of rings – Homomorphisms.

UNIT IV IDEALS
Ideals and Quotient rings: More ideals and Quotient ideals – Field of quotients of an integral domain.

UNIT V EUCLIDEAN RINGS
Euclidean rings: A particular Euclidean ring – Polynomial Rings – Polynomials over the rational field.

Total no. of hrs: 60

TEXT BOOKS:
- Herstein, I.N (2016) *Topics in Algebra, Second Edition,*Wiley Student edition.

REFERENCE BOOKS:
- Santiago, M.L (2001) *Modern Algebra*, Tata McGraw-Hill Publishing Co. Ltd.

P. John
(HOD maths)
15-6-17

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DEPARTMENT OF MATHEMATICS

MA17006   **MULTIVARIATE CALCULUS & THEORY OF NUMBERS**   3 1 0 4

OBJECTIVES:
- To understand the basic concepts in Vector Calculus.
- To understand the basic concepts of Line, Surface and Volume Integral in Vector Calculus.
- To understand the basic concepts in Beta and Gamma Functions, Theory of Numbers.

UNIT I   VECTOR CALCULUS
Gradient - Divergence of a scalar point function and curl of a vector point function - Directional derivative - unit normal to a surface - Solenoidal and irrational vectors – physical interpretation of divergence and curl of a vector point function.

UNIT II   LINE SURFACE AND VOLUME INTEGRAL
Line, Surface and Volume integrals – Simple problems.

UNIT III   THEOREMS ON INTEGRAL CALCULUS
Theorems of Gauss, Stokes and Green's (Statement only) – Simple problems.

UNIT IV   BETA AND GAMMA FUNCTIONS
Definitions of Beta and Gamma Functions – Relations between them – Properties – Evaluation of definite integrals in terms of Beta and Gamma functions – Applications.

UNIT V   THEORY OF NUMBERS
Prime and Composite numbers – The sieve of Eratosthenes-Divisors of a given number N – Euler's function –Integral part of a real number- The highest power of a prime p contained in n! – the product of r consecutive integers is divisible by r!. Congruences – Numbers in arithmetic progressions – Fermat's Theorem- (statement only) - Wilson's theorem – (statement only) – Simple Problems.

Total no. of hrs: 60

TEXT BOOKS:
1) Narayanan, S. Manicavachagom Pillay T.K (2007) *Calculus Vol. II*, S.Viswanathan Publishers.
2) Spiegel, Seymour Lipschutz, Dennis Spellman (2009) *Vector Analysis, Schaum's outline series, Second Edition*, McGraw Hill Book Company.
3) Manicavachagom Pillay,T.K. Natarajan, T. Ganapathy, K.S (2006) *Algebra, Volume – II* ,S. Viswanathan Publishers.

(HOD Maths)
25-6-17

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DEPARTMENT OF MATHEMATICS

MA17007   **CALCULUS II AND INTERGAL TRANSFORMS**   3 1 0 4

OBJECTIVES:

- ➤ To understand the basic concepts in Differential Calculus.
- ➤ To understand the basic concepts in Laplace transform and Inverse Laplace transform .
- ➤ To understand the concepts in Fourier Transform.

UNIT I   CURVATURE

Curvature – Cartesian formula for radius of curvature - The coordinates of the centre of curvature – Evolute and Involute.

UNIT II   RADIUS OF CURVATURE

Radius of curvature in polar coordinates – p-r equation – Envelopes (definitions and problems only) – Linear asymptotes (definitions and simple problems only).

UNIT III LAPLACE TRANSFORMS I

Transforms of simple functions – Properties of Transforms – Inverse Transforms – Transforms of Derivatives and Integrals – Periodic functions.

UNIT IV LAPLACE TRANSFORMS II

Initial and final value theorems – Convolution theorem – Applications of Laplace transforms for solving linear ordinary differential equations up to second order with constant coefficients and Linear simultaneous differential equations of first order with constant coefficients.

UNIT V FOURIER TRANSFORMS

Complex form of Fourier integral formula - Properties of Fourier transform - Fourier Cosine and Fourier Sine Transforms – Properties – Convolution - Parseval's identity.

Total no. of hrs: 60

TEXT BOOKS:
1) Narayanan, S. Manicavachagom Pillay T.K (2010) *Calculus Vol. I*, S.Viswanathan Publishers.
2) Narayanan, S. Manicavachagom Pillay T.K (2010) *Calculus Vol. III*, S.Viswanathan Publishers.

REFERENCE BOOKS:
1) Venkataraman, M.K (2001) *Engineering Mathematics Volume III*, The National Publishing Company.

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15-6-17

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DEPARTMENT OF MATHEMATICS

BBMA17008 **MATHEMATICAL STATISTICS** 3 1 0 4

OBJECTIVES:
- To understand the basic concepts in Discrete distributions.
- To understand the basic concepts in Continuous distributions.
- To understand the basic concepts in Sampling theory.

UNIT I   PROBABILITY DISTRIBUTIONS
Random variables – Probability distributions – Discrete and Continuous - Mathematical expectation – Moments - Moment generating function - Characteristic function.

UNIT II   STANDARD DISTRIBUTIONS
Introduction – Binomial – Poisson - Exponential – Normal distribution.

UNIT III   CORRELATION AND REGRESSION
Correlation coefficient - linear regression – Equations of lines of regression.

UNIT IV   TESTS OF SIGNIFICANCE – LARGE SAMPLES
Introduction – Types of Sampling – Large samples – Testing the significance for a single proportion - Testing of significance for difference of proportions – Sampling of values of a variable – Sampling distribution of the mean – Confidence limits - Testing the significance of difference between standard deviations of two large samples.

UNIT V   TESTS OF SIGNIFICANCE – SMALL SAMPLES
Introduction – Chi – square distribution – Student's t – distribution – Snedecor's F distribution (Definitions only) – Properties (Statements only) - Tests of significance based on t, F - distributions, Chi square test : Goodness of fit, Test of independence.

Total no. of hrs: 60

TEXT BOOKS:
1) Kapur, J.N. Saxena, H.C (2010) *Mathematical Statistics, 20th Edition*, S. Chand & Co. Ltd., New Delhi.

REFERENCE BOOKS:
1) Gupta, S.C. Kapoor, V.K (1994) *Fundamental of Mathematical Statistics, 9th Edition*, Sultan Chand & Sons, New Delhi.
2) Vittal P.R. (2002) *Mathematical Statistics*, Margham Publications.

| | ALLIED COMPUTER SCIENCE: PAPER - I | 3 | 1 | 0 | 4 |

UNIT: I
9 3 0

Evolution of Computers: Generations, Types of computers, Computer system Characteristics, Basic components of a Digital Computer - Control unit, ALU, Input/output functions and memory, Memory addressing capability of a CPU, Word length of a computer, processing speed of a computer, Computer Classification.

UNIT: II
9 3 0

I/O and Memory Devices: Input Units-: Keyboard, Mouse, Trackball, Joystick, Output Unit-Dot Matrix, Inkjet, Laser, Line Printer. Memory - RAM, ROM, EPROM, PROM- Storage fundamentals - Primary Vs Secondary Data Storage, Various Storage Devices - Magnetic Tape, Magnetic Disks, Hard Disk Drives, USB Pen drive.

UNIT: III
9 3 0

Introduction to Ms-Word: Starting Word, Typing and saving your Masterpiece, printing Title Bar, Toolbars, The Ruler, Insertion point, Scroll Bars, The Menu bar, The status bar. Dialog Boxes, Wizards and Templates. Basic Text Editing and Formatting, Working with Tables and Columns

UNIT: IV
9 3 0

Introduction to Ms-Excel: Spreadsheet overview, Excel highlights, starting excel, creating spreadsheet excel menu , Working with Formulas and Functions, Using basic and advance functions, Formatting: Formatting Excel Sheet, Conditional format, Creating and Formatting Charts: Introduction to charts. Creating charts, formatting charts, exploring charts.

UNIT: V
9 3 0

Introduction to Power point - Creating a Presentation with Microsoft PowerPoint, Modifying a Presentation, Inserting Objects into a Presentation, Finishing a Presentation, Working with Advanced Tools and Masters, Enhancing Charts, Inserting Illustrations, Objects and Media Clips, Using Advanced/Features.

Total Number of Periods: 60

REFERENCE BOOKS:

1. Teach Yourself Office 97/2000 for Windows by Corey Sandler, Tam Badgett, Jan Weingarten (Bpb)
2. Microsoft Office 2000 by Complete (Bpb)
3. Mastering Word 2000 by Mansfield (Bpb)
4. Essential Ms-Word 2000 B Marmel (Bpb)
5. Teach Yourself Ms-Excel 2000 in 24 Hours (Bpb)
6. Teach Yourself Ms-Excel 2000 Programming in 21 Days (Bpb)

Head of the Department
Computer Science Engineering
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FACULTY OF HUMANITIES AND SCIENCE
DEPARTMENT OF ENGLISH
CAREER AND CONFIDENCE BUILDING
SYLLABUS (2017- 2018)

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CURRICULUM
SOFT SKILL-I
Common to All UG Courses (H&S)   (50+ 50)

B.B.A., B.C.A.(General), B.C.A.(Animation & Multimedia), B.Com. (General), B.Com. (F), B.Com. (C.S), B.Sc. (Comp. Sci.), B.Sc. (I.Sc.& Cyber Forensics), B.Sc.Comp.,(Science & Networking), B.Sc. (Electronics), B.Sc. (Media & Vis. Com.), B.Sc. (Bio.Tech), B.Sc. (Maths), B.Sc. (Physics), B.Sc. (Chemistry) etc)

COURSE OBJECTIVES:
1. to diagnose the strength and weakness of the student in Functional English
2. to develop the functional grammar
3. to prepare them to use Functional English through LSRW
4. to make them learn through practice and activity
5. to use English Language as a life skill

Prelude

Diagnostic Test- Articles, Forms of 'be' verbs, Tense, Preposition, Gerunds & Infinitives, Reported Speech, Active &Passive Voice, Letter Writing

Unit I   6 hours

Job and career- three types- Govt.,pvt and public sector-Bank, govt.offices, navy, defense, govt.institutions-IT and,BPo and corporate-semi govt like ISRO etc- requirements- advt- skills needed (download the details)

Delivery

Audio and video cassettes

Unit II   6 hours

Technical skill- Communication skill especially in English- strengthening communicative English-Listening, Reading, speaking and writing- Listening- sounds of vowels and consonants and writing them-functional English –difference between functional and theoretical English

R.Pushpala

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CURRICULUM
SOFT SKILL-I
Common to All UG Courses (H&S)   (50+ 50)

(i.e. B.B.A., B.C.A.(General), B.C.A.(Animation & Multimedia), B.Com. (General), B.Com. (A&F), B.Com. (C.S), B.Sc. (Comp. Sci.), B.Sc. (I.Sc.& Cyber Forensics), B.Sc.Comp.,(Science & Networking), B.Sc. (Electronics), B.Sc. (Media & Vis. Com.), B.Sc. (Bio.Tech), B.Sc. (Maths), B.Sc. (Physics), B.Sc. (Chemistry) etc)

COURSE OBJECTIVES:
1. to diagnose the strength and weakness of the student in Functional English
2. to develop the functional grammar
3. to prepare them to use Functional English through LSRW
4. to make them learn through practice and activity
5. to use English Language as a life skill

Prelude
Diagnostic Test- Articles, Forms of 'be' verbs, Tense, Preposition, Gerunds & Infinitives, Reported Speech, Active &Passive Voice, Letter Writing

Unit I   6 hours

Job and career- three types- Govt.,pvt and public sector-Bank, govt.offices, navy, defense, govt.institutions-IT and,BPo and corporate-semi govt like ISRO etc- requirements- advt- skills needed (download the details)
Delivery
Audio and video cassettes

Unit II   6 hours

Technical skill- Communication skill especially in English- strengthening communicative English-Listening, Reading, speaking and writing- Listening- sounds of vowels and consonants and writing them-functional English –difference between functional and theoretical English

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OR EDUCATION INSTITUTION

Unit III

6 hours

Listening and writing
Activity based exercises on articles, modals, prepositions and infinitives
The above topics are chosen as we don't find equivalents' in L1

Unit IV

6 hours

Reading and writing
Vocabulary-synonm, antonym, collocations, confused words, homonym, odd man out, words with correct spelling, avoid redundancy –Inferential comprehension (basede on BEC and Blog on Soft Skills BY me)-browsing , skimming and scanning note- making

Unit V

6 hours

Speaking
Introducing yourself (giving questions)- collecting information in pairs and presenting it for 2 minutes – story telling through picture- interpretation of psychometric pictures through question and answer – PPT preparation and presentation-developing the story in pairs as game

Total:

30 Periods

Text Book , Reference Books and Web Resources:
1. Soft Skill for Everyone-Jeff Butterfield,Part-1; Unit-D&E
2. EFA (English For All)- Dr. Padmasanni Kannan, Libin Roy Thomas
3. English for Competitive Exam- R.P. Bhatnagar,Rajul Bhargava
4. Soft Skill Blog
5. Jobsearch.about.com
6. www.exsearch.in/interview.html

COURSE LEARNING OUTCOME:

Students completing the course Soft Skill-I will be able to
1. know their weakness in the use of English Language.
2. understand the functionality of the language in simple context.
3. improve their communication skill through LSRW.
4. improve the functional grammar through practice and activity.
5. understand the necessity of English Language.

HBMA17009   **LINEAR ALGEBRA**   3 1 0 4

OBJECTIVES:
- To understand the basic concepts in Vector spaces & Linear Transformations.
- To understand the basic concepts of Matrices.
- To understand the concepts of Determinants, Hermitian and Unitary Transformation

UNIT I   VECTOR SPACES
Definitions, examples – Subspaces and Quotient Spaces – Sums and Direct Sums – Linear Independence.

UNIT II BASIS & DIMENSIONS
Basis and Dimensions – Homomorphisms – Dual Spaces – Inner Product Spaces

UNIT III   LINEAR TRANSFORMATIONS AND MATRICES
Algebra of Linear Transformations – Eigen values and Eigen vectors.

UNIT IV MATRIX ALGEBRA
Matrix Algebra – Trace and Transpose of a Matrix – Rank of Matrix.

UNIT V DETERMINANTS
Determinants – Hermitian and Unitary Transformations.

Total no. of hrs: 60

TEXT BOOKS:
1) Santiago, M.L (2003) *Modern Algebra*, Tata McGraw-Hill Publishing Co. Ltd,.

REFERENCE BOOKS:
1) Herstein, I.N (2016) *Topics in Algebra, Second Edition*, Wiley Student edition.

HBMA17010   **REAL ANALYSIS 1**   3 1 0 4

OBJECTIVES:
- To understand the basic concepts in Sets and Functions
- To understand the basic concepts in Sequence and series
- To understand the basic concepts in Metric space
-

UNIT I   SETS AND FUNCTIONS

Sets and elements – Operations on sets – Functions – Real valued functions – Equivalence – Countability – Real numbers – Least upper bounds.

UNIT II   SEQUENCES OF REAL NUMBERS

Definition of a sequence and subsequence – Limit of a sequence – Convergent sequences – Divergent sequences – Bounded sequences – Monotone sequences – Operations on convergent sequences – Operations on divergent sequences.

UNIT III   LIMIT SUPERIOR AND LIMIT INFERIOR

Cauchy sequences - Series of Real Numbers: Convergence and divergence; Series with non-negative numbers; Alternating series.

UNIT IV   TESTS FOR CONVERGENCE

Conditional convergence and absolute convergence - Tests for absolute convergence - Series whose terms form a non-increasing sequence.

UNIT V   METRIC SPACES

Summation of parts - Limits and metric spaces: Limit of a function on a real line - Metric spaces - Limits in metric spaces.

                                                        Total no. of hrs: 60

TEXT BOOKS:
1) Richard Goldberg *Methods of Real Analysis*, Oxford and IBH Publishing Co.

REFERENCE BOOKS:
1) Walter Rudin (2013) *Principles of Real analysis, Third edition*, Mc-Graw Hill international edition.
2) Arumugam, Issac, S. (1993) *Sequence and Series*, New Gamma Publishing House.

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HBMA17011   NUMERICAL METHODS   3 1 0 4

OBJECTIVES:
- ➤ To understand the basic concepts in Solving Algebraic & Transcendental equations.
- ➤ To understand the basic concepts in Interpolation, Numerical Differentiation & Integration.
- ➤ To gain the knowledge about the numerical solutions of ordinary differential equations

UNIT I   SOLUTION OF ALGEBRAIC AND TRANSCENDENTAL EQUATIONS
Algebraic and Transcendental Equations: Introduction, Errors in numerical computation, Iterative method, Bisection method, Regula-Falsi method, Newton-Raphson method.

UNIT II   INTERPOLATION I
Introduction – Finite Differences – Forward and Backward Difference operators – Central Difference operators – Interpolating Polynomial – Gregory-Newton's Forward and Backward interpolation formulae -Gauss forward and backward interpolation formulae (Simple Problems).

UNIT III   INTERPOLATION II
Bessels's and Stirling's Interpolation formula - Lagrange's interpolation formulae - Divided differences: Newton's divided differences formula - Inverse interpolation

UNIT IV   NUMERICAL DIFFERENTIATION AND INTEGRATION
Introduction: Derivatives using Gregory-Newton's forward and backward interpolaion formula, Derivatives using Stilrling's and Bessel's interpolation formula - Numerical integration – Trapezoidal rule, Simpson's one – third and three – eighth rule, Weddle's rule – Gauss Legendre Two point and Three Point formula – Double Integrals: Trapezoidal and Simpson's rules.

UNIT V   NUMERICAL SOLUTIONS OF ORDINARY DIFFERENTIAL EQUATIONS
Introduction: Taylor's series method - Euler method – Modified Euler method - Runge-Kutta method of Fourth order - Predictor-Corrector methods: Milne's method - Adam- Bashforth method.

Total no. of hrs: 60

TEXT BOOKS:
1) Arumugam, S. Thangapandi Isaac, A. Somasundaram, A. (2009 *Numerical Methods*, Scitech Publications Pvt. Ltd.

REFERENCE BOOKS:
1) B.D.Gupta,B.D. (2003) *Numerical Analysis*, Konark Publishers Pvt Ltd.
2) Kandaswamy, P. Thilagavathy, Gunavathi (2013) *Numerical Methods, First Edition*, S.Chand & Company Ltd.

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HBMA17012   **DISCRETE MATHEMATICS**   3 1 0 4

OBJECTIVES:

> To understand the basic concepts in Mathematical Induction
> To understand the basic concepts in Logic & Lattices.
> To understand the basic concepts in Boolean Algebra and Automata.

UNIT I   MATHEMATICAL INDUCTION AND RECURRENCE RELATIONS
Techniques of Proof – Mathematical Induction – Recurrence – Polynomials and their Evaluations – Recurrence Relations – Generating Functions – Some Common Recurrence Relations – Primitive Recursive Functions – Recursive Functions.

UNIT II   MATHEMATICAL LOGIC
TF Statements – Connectives – Atomic and Compound Statements – Well-Formed Statement Formulae –Parsing – Truth Table of a Formula – Tautology – Tautological Implications and Equivalence of Formulae.

UNIT III   LATTICES
Lattices – Some properties of Lattices – New Lattices – Modular and Distributive Lattices

UNIT IV   BOOLEAN ALGEBRA
Boolean Algebra – Boolean Polynomials – Karnaugh Maps

UNIT V   AUTOMATA
Finite automata – regular grammar – Introduction – Context free grammer – Turing machine – finite set machine – introduction – Language recognition

Total no. of hrs: 60

TEXT BOOKS:
1) Venkataraman, Sridharan, Chandrasekaran (2003) *Discrete Mathematics*, The National Publishing Company.

REFERENCE BOOKS:
1) Veerarajan, T (2008) *Discrete Mathematics*, Tata McGraw Hill Publishing Co.
2) Tremblay, J.P Manohar, R (2008) *Discrete Mathematical structures with applications to Computer science*, Tata McGraw Hill Publishing Co.
3) Kolman, Busby, Ross (2014) *Discrete Mathematical Structures*, Pearson.
4) Kenneth Rosen (2007) *Discrete Mathematics and its applications (SIE)*, Tata McGraw Hill Publishing Co.

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ALLIED COMPUTER SCIENCE: PAPER - II	3	0	0	3

9 0 0

UNIT: I
C fundamentals Character set - Identifier and keywords - data types: fundamental datatypes and derived datatypes - Constants - Variables - Declarations – Expressions: Arithmetic, Relational and Logical expressions.

UNIT: II
Operators & Statements: Operators: Arithmetic, Unary, Relational and logical, Assignment and Conditional Operators - Library functions – Expression, Compound and Control Statements

9 0 0

UNIT: III
Data input output functions: Single Character Input and Output– I/O statements - Simple C programs: Adding two numbers, palindrome, odd or even.

9 0 0

UNIT: IV
Control Structures: Flow of control – Simple if statements, if-else, while, do-while, for loop, Nested control structures - Switch, break and continue, go to statements - Comma operator.

9 0 0

UNIT: V
Functions -Definition - prototypes - Passing arguments - Recursion. Storage Classes - Automatic, External, Static, Register Variables.

Total Number of Periods: 60

TEXT BOOK:
1. Ashok N.Kamthane ,Programming with ANSI and Turbo C , Pearson Education, 2006

REFERENCE BOOKS:
1. B.W. Kernighan and D.M.Ritchie, The C Programming Language, 2nd Edition, PHI, 1988.

2. H. Scheldt, C: The Complete Reference, 4th Edition, TMH Edition, 2000.

3. Kanetkar Y., Let us C, BPB Pub., New Delhi, 1999.

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DEPARTMENT OF ENGLISH
QUALITATIVE AND QUANTITATIVE SKILLS
SYLLABUS – 2017 – 2018

HBMG14L02

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CURRICULUM
SOFT SKILL-II

Common to All UG Courses (H&S)   (50+ 50)
(i.e. B.B.A., B.C.A.(General), B.C.A.(Animation & Multimedia), B.Com. (General), B.Com. (A&F), B.Com. (C.S), B.Sc. (Comp. Sci.), B.Sc. (I.Sc.& Cyber Forensics), B.Sc.Comp.,(Science & Networking), B.Sc. (Electronics), B.Sc. (Media & Vis. Com.), B.Sc. (Bio.Tech), B.Sc. (Maths), B.Sc. (Physics), B.Sc. (Chemistry) etc)

COURSE OBJECTIVES:
1. to strengthen the students with the needed vocabulary
2. to infer information from the given passage through reasoning
3. to train them in attending Group Discussion
4. to face the Technical and HR interview of the corporate
5. to raise communication proficiency to global standards

HBMG14L02

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Unit 1
6 hours

Preparation of resume-functional resume with objective according to different advts.-how to have interview file—how to send it by email-concept of writing email-practise through BEC method(questions and answer)

Unit 2
6 hours

Writing secretarial letters like intra-mail and inter-mail, agenda, memo and business reports-introducing GD through video-conduct of GD on a topic and also case studies

Unit 3
6 hours

Body language-grooming –Interview skill- Dos and Donts- mock interview –exchange of interviewer and interviewee practical session

Unit 4 (Department of Mathematics)
6 hours

Number system – H.C.F & L.C.M – Problem on ages – Percentage – Profit & Loss – Ratio &
Proportion – Partnership.

Unit 5
                                                                                6 hours

Time & Work – Time & Distance – Clocks – Permutations & Combinations – Heights & Distances
– Odd man out and Series.

  Total: 30 Periods

TEXT BOOKS, REFERENCE BOOKS AND WEB RESOURCES:

1. Soft Skill for Everyone-Jeff Butterfield,Part-1; Unit-D&E
2. EFA (English For All)- Dr. Padmasanni Kannan, Libin Roy Thomas
3. English for Competitive Exam- R.P. Bhatnagar,Rajul Bhargava
4. Placement Interview- S.Anandamurugan,Chapter-2&3
5. Alex K, Soft Skills ; S. Chand & Company Pvt Ltd, 2009
6. Rizvi Ashraf M, Effective Technical Communication ; Tata McGraw – Hill ; 2005
7. Thorpe, Edgar, Course in Mental Ability and Quantitative Aptitude : Tata McGraw – Hill, 2003
8. Agarwal, R.S, A Modern Approach to Verbal and Non-verbal Reasoning, S. Chand & Co ;2004
9. R.S.Agarwal, Quantitative Aptitude for Competitive Examinations, S.Chand & Co., (2017)
10. Jobsearch.about.com
11.www.exsearch.in/interview.html

COURSE LEARNING OUTCOME:
Students completing the course Soft Skill-II will
1. be strengthened in the vocabulary
2. improve their reasoning and finding a logical sequence in the passage given
3. be prepared to face Group Discussion
4. know the nuances of the interview of the corporate
5. raise communication proficiency to global standards

Kambala

HBMA17013   **REAL ANALYSIS II**   3 1 0 4

OBJECTIVES:
- To understand the basic concepts in Metric spaces, Connectedness.
- To understand the basic concepts in Completeness and compactness.
- To understand the basic concepts in Sequences and Series of Functions.

UNIT I   CONTINUOUS FUNCTIONS ON METRIC SPACES

Introduction: Functions continuous at a point on the real line – Reformulation - Functions continuous on a metric space - Open sets - Closed sets - Discontinuous functions on the real line.

UNIT II   COMPLETENESS AND COMPACTNESS

Connectedness, Completeness and compactness: More about open sets - Connected sets - Bounded sets and totally bounded sets - Complete metric spaces.

UNIT III   COMPACT METRIC SPACE

Introduction: Continuous functions on a compact metric space - Continuity of inverse functions - Uniform continuity - Sets of measure zero - Definition of the Riemann integral - Existence of the Riemann integral (Statement of theorem 7.3a only) –Properties of Riemann integral.

UNIT IV   CALCULUS

Derivatives - Rolle's theorem - Law of mean - Fundamental theorems of calculus - Taylor's theorem.

UNIT V   SEQUENCES AND SERIES OF FUNCTIONS

Sequences and Series of Functions: Point wise convergence of sequences of functions – Uniform convergence of sequences of functions – Consequences of uniform convergence – Convergence and uniform convergence of series of functions – Integration and differentiation of series of functions.

Total no. of hrs: 60

TEXT BOOKS:
1) Richard Goldberg *Methods of Real Analysis*, Oxford and IBH Publishing Co.

REFERENCE BOOKS:
1) Chandrasekhara Rao, K. Narayan, K.S (2008) *Real analysis, Volume II*, S.ViswanathanPrinters & Publishers Pvt. Ltd.
2) Shanti Narayan, Raisinghania (2011) Elements of Real Analysis, S.Chand & Company Ltd.

HBMA17014

MECHANICS

3 1 0 4

OBJECTIVES:

- To understand the basic concepts in Statics.
- To understand the basic concepts in Friction & Projectiles.
- To understand the basic concepts in Central Orbits.

UNIT I   STATICS
Concurrent system of forces: Triangle law of forces - Lami's Theorem - Parallel law of forces- Moment of Inertia.

UNIT II   LAWS OF FORCES
Polygon law of forces - Moment of a force - Varignon's Theorem - Laws of friction - Angle of friction - Ladder problems.

UNIT III   DYNAMICS
Energy: Kinetic energy - Conservation of energy - Conservation forces.

UNIT IV   PROJECTILES
Trajectory - Horizontal and inclined planes - S.H.M: General solution - Elastic strings - Composition of two S.H.M, - Simple Pendulum - Seconds Pendulum.

UNIT V   CENTRAL ORBITS
Central forces - Differential equation of a central orbit - Pedal equation - Apse, p-r equation - Inverse square law.

Total no. of hrs: 60

TEXT BOOKS:

1) Venkataraman, M.K (2012) *A text book of Statics*, M.K Agasthiar Publications.
2) Venkataraman, M.K (2012) *A text book of Dynamics*, M.K Agasthiar Publications.

REFERENCE BOOKS:

1) Duraipandian, Laxmi Duraipandian, Muthamizh Jayapragasam (2010) *Dynamics*, S.Chand & Company Ltd.
2) Viswanatha Naik, Kasi (1992) *Statics*, Emerald Publishers.
3) Viswanatha Naik, Kasi (1992) *Dynamics*, Emerald Publishers.

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HBMAI7015

OPERATION RESEARCH I

3 1 0 4

OBJECTIVES:

➤ To understand the basic concepts in Linear Programming.
➤ To understand the basic concepts in Transportation & Assignment problems.
➤ To understand the basic concepts in Queueing models

UNIT I   LINEAR PROGRAMMIMG

Introduction- Linear Programming Problem –Mathematical formulation of L.P.P – Illustration on Mathematical formulation of L.P.P - General Linear Programming Problem –Canonical and Standard Forms of L.P.P.-Graphical Solution Method –Simplex method –Big-M Methods-Two Phase method

UNIT II   TRANSPORTATION PROBLEM

Introduction – LP formulation of the transportation Problem –Existence of solutions in T.P - Solution of a Transportation Problem –Finding an Initial Basic Feasible Solution –Test for Optimality - Transportation Algorithm (Modi Method).

UNIT III   ASSIGNMENT PROBLEM

Introduction - Mathematical Formulation of the problem - Solution – Hungarian methods –Travelling Salesman Problems.

UNIT IV   DUALITY IN LINEAR PROGRAMMIMG

Introduction – General Primal-Dual Pair - Formulating a Dual Problem - Primal-Dual Pair in Matrix Form - Duality Theorems - Complementary Slackness Theorem - Duality and Simplex Method.

UNIT V   QUEUEING MODELS

Kendal's notation – Birth and Death process Models: 1. Single server, unlimited capacity 2. Single server, limited capacity 3. Multiple server, unlimited capacity 4. Multiple server, limited capacity

Total no. of hrs: 60

TEXT BOOKS:

1) Kanti Swarup, Gupta, Man Mohan (2010) Operations Research, Sultan Chand and Sons Ltd.

REFERENCE BOOKS:

1) Prem Kumar Gupta, Hira, D.S (2010) Operations Research, S. Chand &Company Ltd.

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HBMA17016

FINANCIAL MATHEMATICS

3 1 0 4

OBJECTIVES:

- To understand the basic concepts in Simple Interest & Compound Interest.
- To understand the basic concepts in Sinking Funds.
- To understand the basic concepts in Bonds & Capital Budgeting

UNIT I   SIMPLE INTEREST AND COMPOUND INTEREST

Simple interest - Equations of value - Partial payments - Simple discount - Compound Interest - Accumulated value, Discounted value - Finding the rate - Finding the time - Equations of value - Compound Discount.

UNIT II   SIMPLE ANNUITIES

Simple Annuities - Accumulated value and discounted value of ordinary simple annuity - Finding term and interest rate - General annuities - Perpetuities.

UNIT III   AMORTIZATION AND SINKING FUNDS

Amortization of a debt - Outstanding funds ~ Mortgages - Sinking funds - Comparison of amortization and sinking fund methods.

UNIT IV   BONDS

Callable bonds - Premium and discount - Price of a bond between bond interest dates - Finding the yield rate - Other type of bonds.

UNIT V   CAPITAL BUDGETING AND DEPRECIATION

Net present value - Internal rate of return - Capitalized cost and capital budgeting - Depreciation.

Total no. of hrs: 60

TEXT BOOKS:

1) Petra Zima, Robert Brown (2011) *Mathematics of Finance, Second edition*, Schaum's Outlines Tata McGraw-Hill.

REFERENCE BOOKS:

1) Vittal, P.R (2005) *Business Mathematics*, Margham Publications.

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HBMA17017 **COMPLEX ANALYSIS** 3 1 0 4

OBJECTIVES:

- To understand the basic concepts in Analytic functions & Conformal mapping.
- To understand the basic concepts in Complex Integration.
- To understand the basic concepts in singularities.

UNIT I ANALYTIC FUNCTIONS

Introduction - Functions of a Complex variable - Mappings, limits - Theorem on limits – Continuity – Derivatives - Differentiation formulas - Cauchy Riemann equations - sufficient conditions - Polar coordinates, Analytic functions - Harmonic functions.

UNIT II CONFORMAL MAPPING

Introduction – preservation of angles - Linear fractional transformations - an implicit form - Mappings of the upper half plane - Special linear fractional transformations, $w = z^2$, $w = e^z$.

UNIT III COMPLEX INTEGRATION

Integrals: Contours - Contour integrals - upper bounds for moduli of contour integrals - Anti derivatives - Cauchy Goursat theorem - Proof of the Cauchy Goursat theorem - Simply and Multiply connected domains – Cauchy integral formula – Derivatives of Analytical functions - Liouville's theorem and Fundamental theorem of Algebra – Maximum modulus principle.

UNIT IV INFINITE SERIES, POWER SERIES

Convergence of sequence - Convergence of series - Taylor's series - Laurent series - Absolute and uniform convergence of power Series - Continuity of sums of power series - Integration and differentiation of power series - Uniqueness of series representation.

UNIT V SINGULARITIES

Residues – Cauchy Residue theorem, Using a single residue - The three types of isolated singular points - Residues at poles - Zeros of analytical functions - Zeros and poles - Evaluation of real improper integrals - improper integrals from Fourier Analysis – Jordan's lemma - Definite integrals involving sines and cosines.

Total no. of hrs: 60

TEXT BOOKS:

1) James Brown, Churchill (2003) *Complex variables and application, Seventh Edition*, Mc-Graw Hill Book Co.

REFERENCE BOOKS:

1) Arumugam, Thangapandi Isaac, Somasundaram (2010) *Complex Analysis*, Scitech publications (India) Pvt. Ltd.
2) Venkatachalapathy, S.G (2009) *Complex Analysis*, Margham Publication.

HBMA17018   **OPERATION RESEARCH II**   3 1 0 4

OBJECTIVES:
- To understand the basic concepts in Inventory
- To understand the basic concepts in Network, Sequencing & Simulation.
- To understand the basic concepts in Game theory and Replacement Models.

UNIT I   INVENTORY
Elementary concepts –Static EOQ models: Classic EOQ model –EOQ with price breaks –Dynamic EOQ models: No setup model - Setup model.

UNIT II   NETWORK MODELS
Rules for construction of network diagram - Ford and Fulkerson's rules for node numbering – Forward pass and Backward pass calculations – Critical path and project duration – Floats – Comparison of CPM and PERT – Expected duration and Standard deviation of expected duration of activities in PERT – Probability of completion of project in the given duration.

UNIT III   SEQUENCING & SIMULATION
Assumptions – Johnson's method for processing 'n' jobs in 2 machine, 3 machines and multiple machines – Calculation of total elapsed time and idle time for machines – Graphical method for processing 2 jobs on multiple machines -Simulation- Advantages and Limitations – Monte-Carlo Technique – Random Numbers – Applications.

UNIT IV   GAME THEORY
Properties – Maximin – Minimax principle – Saddle point – Pure strategy –game without saddle point- Mixed strategy – Methods for 2x2 game – Matrix oddment method Dominance Graphical method Iterative method.

UNIT V   REPLACEMENT MODELS
Optimal replacement policy for capital equipment – Money value not considered – Present Worth Factor (pwf) – Individual and Group replacement policies.

Total no. of hrs: 60

TEXT BOOKS:
1) Kanti Swarup, Gupta, Man Mohan (2010) Operations Research, Sultan Chand and Sons Ltd.

REFERENCE BOOKS:
1) Prem Kumar Gupta, Hira, D.S (2010) Operations Research, S. Chand &Company Ltd.

HBMA17019   **FUZZY SET THEORY**   3 1 0 4

OBJECTIVES:

- To understand the basic concepts in Fuzzy sets & Relations
- To understand the basic concepts in Possibility theory
- To understand the basic concepts in Fuzzy Logic

UNIT I   FUZZY SETS

Basic concepts – α-cuts – Properties of α-cuts – Representation of fuzzy sets – Decomposition theorems – Extension priniciple.

UNIT II   OPERATIONS ON FUZZY SETS AND FUZZY ARITHMETIC

Types of Operations - Fuzzy Complements – Fuzzy intersections: t-Norms – Fuzzy Unions: t-Conorms – Fuzzy Numbers – Arithmetic operations on Fuzzy numbers – Fuzzy Equations.

UNIT III   FUZZY RELATIONS

Binary Fuzzy relations – Relations on a Single set – Equivalence relations – Compatibility relations – Fuzzy Ordering relations.

UNIT IV   POSSIBILITY THEORY

Fuzzy Measures – Possibility theory - Fuzzy sets and Possibility theory - Possibility theory and Probability theory.

UNIT V   FUZZY LOGIC

Introduction - Fuzzy Propositions - Fuzzy Quantifiers – Inference from Conditional Fuzzy Propositions - Inference from Conditional and Qualified Propositions - Inference from Quantified Propositions.

Total no. of hrs: 60

TEXT BOOKS:

1) George Kir, Tina Folger (2011) *Fuzzy sets, Uncertainty and Information*, Prentice Hall of India.
2) Zimmerman, H.J (2000) *Fuzzy set Theory and its Applications*, Allied Publishers Ltd.
3) Kwang H.Lee (2005) *First course on Fuzzy theory and Applications*, Springer.

REFERENCE BOOKS:

1) Klir, Yuan (2015) *Fuzzy sets and Fuzzy logic – Theory and Applications*, Prentice Hall of India.

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HBMA17E01   **FLUID DYNAMICS**   3 0 0 3

OBJECTIVES:

➤ To understand the basic concepts in Kinematics.
➤ To understand the basic concepts in Two Dimensional Flows.
➤ To understand the basic concepts Three Dimensional flows.

UNIT I   KINEMATICS OF FLUIDS IN MOTION

Real fluids and ideal fluids – velocity of a fluid at a point – stream lines and path lines; steady and unsteady flows – the velocity potential – the vorticity vector – local and particle rates of change – the Equations of continuity – worked examples – Acceleration of fluid – Conditions at a rigid boundary – general analysis of fluid motion.

UNIT II   EQUATIONS OF MOTIONS OF A FLUID

Pressure at a point in a fluid at rest – Pressure at a point in moving fluid – Conditions at a boundary of two inviscid immiscible fluids – Euler's equation of motion - Bernoulli's equation – worked examples.

UNIT III   STEADY MOTION &VORTEX MOTION

Discussion of the case of steady motion under conservative body forces – some flows involving axial symmetry – some special two dimensional flows – Impulsive motion – some further aspects of Vortex motion.

UNIT IV   TWO DIMENSIONAL FLOWS

Meaning of Two dimensional flow – use of cylindrical polar coordinates – stream function – the complex potential for two dimensional, irrotational, incompressible flow – the complex velocity potentials for standard two dimensional flows – some worked examples – Two dimensional image systems – Milne Thompson circle Theorem – The Theorem of Blasius.

UNIT V   THREE DIMENSIONAL FLOWS

Introduction – Sources, sinks and doublets – Images in a rigid infinite plane – Images in solid spheres – Axisymmetric flows - Stoke's stream function.

Total no. of hrs: 60

TEXT BOOKS:

1) Chorlton, F (2004) *Text book of Fluid Dynamics*, CBS Publishers.

REFERENCE BOOKS:

1) Walther Kaufmann (1963) *Fluid Dynamics*, Tata McGraw-Hill.

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HBMA17E02 MATHEMATICAL MODELING 3 0 0 3

OBJECTIVES:

- To understand the basic concepts in Mathematical Modeling through Ordinary Differential Equations.
- To understand the basic concepts in Mathematical Modeling through Difference Equations.
- To understand the basic concepts in Mathematical Modeling through Graphs.

UNIT I   MATHEMATICAL MODELING THROUGH ODE OF FIRST ORDER
Linear Growth and Decay Models – Non-Linear Growth and Decay Models – Compartment Models – Dynamic problems – Geometrical problems.

UNIT II   MATHEMATICAL MODELING THROUGH SYSTEMS OF ODE OF FIRST ORDER
Population Dynamics – Epidemics – Compartment Models –Economics – Medicine, Arms Race, Battles and International Trade – Dynamics.

UNIT III   MATHEMATICAL MODELING THROUGH ODE OF SECOND ORDER
Planetary Motions – Circular Motion and Motion of Satellites –Mathematical Modeling through Linear Differential Equations of Second Order –Miscellaneous Mathematical Models.

UNIT IV   MATHEMATICAL MODELING THROUGH DIFFERENCE EQUATIONS
Basic Theory of Linear Difference Equations with Constant Coefficients – Economics and Finance – Population Dynamics and Genetics – Probability Theory.

UNIT V   MATHEMATICAL MODELING THROUGH GRAPHS
Solutions that can be Modelled Through Graphs – Mathematical Modeling in Terms of Directed Graphs, Signed Graphs, Weighted Digraphs and Unoriented Graphs.

Total no. of hrs: 60

TEXT BOOKS:
1) Kapur, J.N (2015) *Mathematical Modeling*, Wiley Eastern Limited.

REFERENCE BOOKS:
1) Kapur, J.N (2008) *Mathematical Models in biology and Medicine*, EWP.

B.Sc - Mathematics - 2017 Regulations

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UNIVERSITY
(Decl U/S 3 of the UGC Act 1956)
DEPARTMENT OF MATHEMATICS

HBMA13E03

APPLICATIONS OF PARTIAL DIFFERENTIAL EQUATIONS & SPECIAL FUNCTIONS

3 0 0 3

OBJECTIVES:

➢ To understand the basic concepts of Partial differential equation
➢ To understand the basic concepts in Lagrange's equations, Wave & Heat equations.
➢ To understand the basic concepts in Bessel's functions.

UNIT I ONE DIMENSIONAL HEAT & WAVE EQUATION
Derivation of One Dimensional Wave Equation – Solution of One Dimensional Wave Equation – One Dimensional Heat Flow – Solution of One Dimensional Heat Equation

UNIT II TWO DIMENSIONAL HEAT & WAVE EQUATION
Two Dimensional Heat equation – Cartesian Form – Temperature Distribution in a Rectangular Plate – Temperature Distribution in an Infinite Plate – Temperature Distribution In Rectangular Plate with Insulated Sides

UNIT III POWER SERIES
Power series solution of differential equations - Ordinary point - Solution about singular points - Frobenius method

UNIT IV BESSEL EQUATION
Introduction: Solution of Bessel's equation - Bessel's functions $Jn(x)$ - Recurrence Formulae - Equations reducible to Bessel's equation - Orthogonality of Bessel's Functions - Generating function for $Jn(x)$.

UNIT V LEGENDRE'S EQUATION
Legendre's equation - Legendre's polynomial $Pn(x)$ - General solution of Legendre's equation, - Rodrigue's formula - Legendre polynomials - Generating function of Legendre's polynomial - Orthogonality of Legendre polynomials - Recurrence formulae for $Pn(x)$.

Total no. of hrs: 60

TEXT BOOKS:

1) Arumugam, Thangapandi Isaac, Somasundaram *Engineering Mahematics Volume – III Second Edition*, Scitech Publications (India) Pvt. Ltd.

REFERENCE BOOKS:

1) Gupta, B.D (2009) *Mathematical Physics, Second Revised Edition*, Vikas Publising House Pvt. Ltd.

HBMA17E04

INTRODUCTION TO MATHEMATICA

2 0 1 3

OBJECTIVES:

- ➢ To understand the basic concepts in the programming with Mathematica.
- ➢ To solve Numerical methods.
- ➢ To understand Two and Three dimensional plots.

UNIT I

Simplification of algebraic expression - simplification of expressions involving special functions, built in functions for transformations on trigonometric expressions - Definite and indefinite symbolic integration - Symbolic sums and products - Symbolic solution of ordinary and partial differential equations - Symbolic linear algebra equations solving, calculus, polynomial functions, matrix operations.

UNIT II

Special functions - Inverse error function - Gamma and beta function - hyper-geometric function - Elliptic function, Mathieu function.

UNIT III

Numerical solution of differential equations, numerical solution of initial and boundary value problems - Numerical integration - Numerical differentiation - Matrix manipulations and optimization techniques.

UNIT IV

Two and Three dimensional plots - Parametric plots - Contours, - Typesetting capabilities for labels and text in plots, direct control of final graphics size, resolution etc.

UNIT V

Algebra - Linear algebra – calculus - vector analysis - Laplace and Fourier transforms.

Total no. of hrs: 60

TEXT BOOKS:
1) Stephen Wolfram (2003) *The Mathematica book*, Wolfram Research Inc.

REFERENCE BOOKS:
1) Wellin, Gaylord, Kamin (2005) *An introduction to programming with Mathematica*, 3rd ed, Cambridge.

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HBMA17E05   **GRAPH THEORY**   3 0 0 3

OBJECTIVES:
- To understand the basic concepts of Graph theory.
- To understand the basic concepts in Trees.
- To understand the basic concepts in Colorability.

UNIT I   INTRODUCTION TO THEORETICAL CONCEPTS
Graphs – Subgraphs - Degree of a vertex - Hand shaking Theorem - Isomorphism of graphs - Operations on Graphs - Independent sets and coverings

UNIT II   GRAPHICAL SEQUENCES
Adjacency and incident matrices - Degree sequences and graphic sequences - Walks Trials – Paths - Cycles Shortest path problem

UNIT III   CONNECTIVITY
Connectedness and components – Cutpoint - Bridge, block, connectivity Theorems and simple problems

UNIT IV   TREES, EULERIAN AND HAMILTANIAN GRAPHS
Trees-simple problems -Euler tours - Hamiltanian Cycles - Chinese Postman problem - Travelling salesman problem.

UNIT-V   COLORABILITY AND PLANARITY
Colorability - Chromatic number and index - Four color Theorem - Five color Theorem - Vizing's Theorem - Time Tabling Problem - Planarity - Definitions and properties - Characterisation of planar graphs.

Total no. of hrs: 60

TEXT BOOKS:
1) S.Arumugam, S.Ramachandran (2001) *Invitation To Graph Theory*, SciTech publications, Chennai.

REFERENCE BOOKS:
1) Parthasarathy, K.R (2001) *Basics of Graph theory* , TMH Publishing company Ltd.
2) Bondy, J.A Murthy, U.S.R *Graph theory with Applications* , M.C. Millan Press

HBMA17E06

ASTRONOMY

3 0 0 3

OBJECTIVES:

- To understand the basic concepts about the universe
- To understand the working knowledge about the universe
- To understand the working knowledge about the Eclipses

UNIT I CELESTIAL SPHERE

Celestial Sphere - Diurnal motion - Simple Problems (No derivation)

UNIT II ZONES OF EARTH

Zones of Earth - Terrestrial Latitudes and Longitudes - Rotation of Earth - Dip of the horizon - Simple problems (No derivation).

UNIT III TWILIGHT

Twilight - Simple problems - Astronomical refraction - Simple problems. (No derivation)

UNIT IV KEPLER'S LAWS

Kepler's Laws - simple problems (No derivation)

UNIT V ECLIPSES

Moon - phases of moon - Eclipses - Introduction — umbra and penumbra - lunar eclipse - solar eclipse - condition for the occurrence of lunar and solar eclipses.

Total no. of hrs: 60

TEXT BOOKS:

1) Kumaravelu and Susheela Kumaravelu (2004) *Astronomy*, SKV Publishers.

REFERENCES BOOKS:

1) Thiruvenkatacharya V (1972) *A text book of Astronomy*, SChand & Co. Pvt. Ltd.
2) Kartunen, H (2013) *Fundamental Astronomy*, Content Technologies Publications.