HINDI MAHAVIDYALAYA

(AUTONOMOUS & NAAC RE-ACCREDITED)
(Affiliated to Osmania University)
Nallakunta, Hyderabad-44

B.Sc. I - III YEARS - SEMESTERS I - VI
DEPARTMENT OF MATHEMATICS
(2022 – 2023)

HINDI MAHAVIDYALAYA

(AUTONOMOUS & NAAC RE-ACCREDITED)
(Affiliated to Osmania University)
Nallakunta, Hyderabad-44

DEPARTMENT OF MATHEMATICS
B.Sc. Mathematics

(BOS – MEETING on 30-11-2022)

SYLLABUS, MODEL PAPER
PANEL OF EXAMINERS etc...

For the Academic Year
2022 – 2023

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
COMPOSITION OF THE BOARD OF STUDIES IN AN AUTONOMOUS COLLEGE

I.   Composition: Department of Mathematics

1. Head of the Department concerned (Chairman)

   Smt. G. Sreevani , Department of Mathematics

2. The entire faculty of each specialization

   1. Smt. G. Sreevani
   2. Smt. T. Rama devi
   3. Mr. M . Sudhakar
   4. Mr. T. Thirupathaiah

3. One expert to be nominated by the Vice Chancellor from a panel of six recommended by the College Principal

   1. **Prof. N. Kishan,** University Nominee (Mathematics) & HOD, Department of Mathematics Osmania University, Hyderabad.
   2. **Prof. G. Kamala,** Chairperson, BOS, Dept. of Mathematics, Osmania University, Hyderabad.

   Two experts on the subject from outside the college to be nominated by the Academic Council.

   3. **Prof. B. Surender Reddy** , Department of Mathematics, Osmania University, Hyderabad.
   4. **Mrs. K.Elizabeth Rani,** Lecturer, Department of Mathematics , GDC Chanchalguda, Hyderabad.

4. One postgraduate meritorious alumnus to be nominated by the Principal. The Chairman, Board of Studies, may with the approval of the Principal of the College.

   (a) Experts from outside the College whenever special courses of studies are to be formulated. -To be nominated.
   (b) Other members of staff of the same faculty.

Chairperson	University Nominee	Chairperson	Members	Principal
	Dr. N. KISHAN (BOS, Dept of Maths , OU)		1.	
	Professor & Head			
	Department of Mathematics		2.	
	OSMANIA UNIVERSITY			
	HYDERABAD-500 007, T.S.			

PRINCIPAL
HINDI MAHA VIDYALAYA
(AUTONOMOUS)
Arts, Commerce & Science
Nallakunta, Hyderabad-44

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
DEPARTMENT OF MATHEMATICS
AGENDA OF THE MEETING

1   Welcome address by the chair.

2   Previous Meeting Details.

3   Present Meeting Details

4   Details of choice based credit system.

5   Discussion and Distribution of Common Core Syllabus for all the Semester (I - VI)

6   Marks allotted for internal and end semester exams.

7   Discussion on Pattern and model paper of Semester Exam and internal exam for all the Semester (I - VI)

8   Panel of Examiners

9   Any other matter

10   Vote of thanks

Chairperson	University Nominee	Chairperson	Members	Principal
		(BOS, Dept of Maths , OU)		

Dr. N. KISHAN
Professor & Head
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HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
DEPARTMENT OF MATHEMATICS
BOARD OF STUDIES
Academic Year – 2022 – 2023
Minutes of BOS Meeting

BOS meeting of the Department of Mathematics held on   30-11-2022   .
The following members were present

Prof. N.Kishan	-	University Nominee & HOD, Department of Mathematics, Osmania University
Prof. G.Kamala	-	Chair person, BOS, Departmnet of Mathematics , Osmania University, Hyderabad
Smt. G. Sreevani	-	Chair person, BOS, HMV, Hyderabad
Prof. B. Surender Reddy	-	Member of BOS, Department of Mathematics, Osmania University, Hyderabad
Mrs. K.Elizabeth Rani	-	Member of BOS, Lecturer, Department of Mathematics , GDC Chanchalguda, Hyderabad.

1 Welcome address by the chair

The chair welcomed the University Nominee, Chairperson BOS, O.U. Department of Mathematics and Members of B.O.S.

2 Previous Meeting details

The NEW CBCS system has been introduced by Osmania University from 2019-20.

The theory syllabus of I, II years of B.Sc., Question paper pattern for theory, internal assessment pattern, and panel of examiners were discussed and approved by all the BOS Members in previous BOS meeting.

3 Present Meeting details

In this meeting we have to discuss the following points
- The Mathematics syllabus of III year B.Sc. .
- Question paper pattern for Theory, GE & Mathematical Modelling.
- Scheme of evaluation of Mathematics Project Work.
- Internal Assessment question paper pattern for Theory, GE & Mathematical Modelling.
- Panel of Examiners.
- We introduced the new elective paper Complex Analysis in V Semester.

4 Details of choice based credit system.

Members were informed that TSCHE has referred that from the academic year 2019-20 autonomous institutions have to follow NEW CBCS i.e. From the Academic Year 2019-20 Osmania University has instructed all the Degree colleges including Autonomous Degree colleges to follow NEW CBCS under which after passing the exam student will get the Grade in the Final Result

5 Discussion and Distribution of Common Core Syllabus for semester I - VI.

i. Members were informed by the chairperson that Department of Mathematics, Hindi Mahavidyalaya is following common core syllabus prescribed by Osmania University B.Sc. I - III Years in I - VI semesters.

ii. The syllabus comprises of 4 units.
iii. Syllabus copy for all semesters is enclosed.
iv. Syllabus was approved by the Members of BOS.

5 Marks allotted for Internal and end Semester exams.

1. Internal assessment is of 20 marks where students have to answer 20 MCQs in 30 minutes. Each question carries 1 mark. In each Semester two internal assessments of 20 Marks will be conducted, and an average of both the internal assessments, Assignment for 5 marks and Student Seminar for 5 marks will be added in the marks of theory exam.
2. Theory Question paper is of 70 marks.
3. Total allotted marks are 100 for each theory paper DSC / DSE (A&B).

The distribution of marks was approved by the Members of BOS.

6 Discussion on Pattern and Model Paper of Semester exam and Model Paper of Internal   Exam

1. It was informed by the department that in each Semester Two Internal exams will   be conducted for 20 marks. The internal assessment will have three sections.
Section – A   20 multiple choice questions each carries 1 marks (20 x 1 = 20 M),
Section – B   Assignment – 5 Marks
Section – C   Seminar – 5 Marks
Average of marks of these two internal exams will be taken.

2. Semester exam will be conducted as per the Almanac which will be provided by the exam branch. Internal exam duration will be 30 Min. and Semester end exam duration will be of $2\frac{1}{2}$ hrs.

3. Model Question paper for Semesters I -VI were discussed. Theory paper for each Semester will have 2 sections.
i) Section A contains 8 short Questions. The student has to answer six questions. Each Question carries 3 Marks (6X3=18 Marks)
ii) Section B contains 4 Essay type Questions with internal choice. Each Question Carries 13 Marks (4X13=52 Marks)

4. Model Question paper of AECC / SEC for Semesters I - IV were discussed. Model Question paper for each AECC / SEC will have 2 sections.
i) Section A contains 4 short Questions. The student has to answer THREE questions. Each Question carries 5 Marks (3 X 5 = 15 Marks)
ii) Section B contains 2 Essay type Questions with internal choice. Each Question Carries 10 Marks (2 X 10 = 20 Marks)

Model Paper of Internal Exam of AECC/ SEc for I - IV Semesters ONE Internal exam will be conducted for 15 marks. The internal assessment will have only ONE section.
This Section contains 15 multiple choice questions each one carries 1 marks (15 x 1 = 1 5 M).

5. Model Question paper of **GE & Mathematical Modelling** for Semester V &VI was discussed.

Marks allotted for Internal Assessment for GE & Mathematical Modelling.
Internal assessment is of 20 marks where students have to answer 20 MCQs in 30 minutes. Each question carries 1 mark. In each Semester two internal assessments of 20 Marks will be conducted, and an average of both the internal assessments, Assignment for 5 marks and Student Seminar for 5 marks will be added in the marks of theory exam.

Theory paper for each GE & Mathematical Modelling will have 2 sections.
i) Section A contains 8 short Questions. The student has to answer six questions. Each Question carries 3 Marks (6X3=18 Marks)
ii) Section B contains 4 Essay type Questions with internal choice. Each Question

Carries 13 Marks (4X13=52 Marks)

- Pattern of Model Theory Question Papers for All Semester end exam Papers are enclosed

- Pattern of Model Theory Question Papers for **GE & Mathematical Modelling** Papers are enclosed.

- Evaluation of Mathematics Project Work Scheme is enclosed

7 Panel of Examiners

The panel of examiners was approved by the members.

- List is enclosed

8 Any other matter.

9 Vote of Thanks

Meeting concluded with the Vote of Thanks by

| Chairperson | University Nominee | Chairperson | Members | Principal |

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DEPARTMENT OF MATHEMATICS

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Smt. G. Sreevani
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Nallakunta, Hyderabad

Prof. N. Kishan
University Nominee & HOD
Department of Mathematics
Osmania University, Hyderabad

Dr. N. KISHAN
Professor & Head
Department of Mathematics
OSMANIA UNIVERSITY
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Prof. G. Kamala
Chairman-BOS
Department of Mathematics
Osmania University, Hyderabad

Chairperson
BoS in Mathematics
Department of Mathematics
Osmania University,
Hyderabad-500 007.

Members of BOS

1. **Prof. B. Surender Reddy**
   Department of Mathematics.
   Osmania University, Hyderabad.

2. **Mrs. K.Elizabeth Rani**
   Lectuere, Department of Mathematics
   GDC , Chanchalguda, Hyderabad

Faculty of Mathematics Department

3. **Sri. M.Sudhakar**
   Lecturer. Department of Mathematics
   Hindi Mahavidyalaya
   Nallakunta, Hyderabad

4. **Smt. T.Ramadevi**
   Lecturer. Department of Mathematics
   Hindi Mahavidyalaya
   Nallakunta, Hyderabad

5. **Sri.T. Thirupathaiah**
   Lecturer. Department of Mathematics
   Hindi Mahavidyalaya
   Nallakunta, Hyderabad

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B.SC. MATHEMATICS 1ST Year I Semester (MPC / MPCS / MSCS)
Academic Year 2022 – 23
Choice Based Credit System (CBCS)

Code	Course Title	Course Type	HPW	Credits	Continuous Evaluation System					End Semester Marks	Practical Marks	Total Marks
					Internal Marks	Assignment Marks	Seminar Marks	Total Internal Marks				
BS 101	ENVIRONMENTAL SCIENCE	AECC – 1	2	2	15	---	---	15		35	---	50
BS 102	ENGLISH – I	CC – 1A	4	4	20	5	5	30		70	---	100
BS 103	SECOND LANGUAGE - I	CC – 2A	4	4	20	5	5	30		70	---	100
BS 104	OPTIONAL I MATHEMATICS - I	DSC – 1A	5 + 1*	5	20	5	5	30		70	---	100
BS 105	OPTIONAL II PHYSICS – I / STATISTICS – I	DSC – 2A	4 + 3	4 + 1	20	5	5	30		70	25	125
BS 106	OPTIONAL III COMPUTER SCIENCE – I / CHEMISTRY - I	DSC – 3A	4 + 3	4 + 1	20	5	5	30		70	25	125
		Total	30	25	115	30	30	165		385	50	600

*Tutorials: Problems solving session for each 20 student's one batch.

Chairperson

University Nominee

Dr. N. KISHAN
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Chairperson
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Principal

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B.SC. MATHEMATICS 1ST Year II Semester (MPC / MPCS / MSCS)

Academic Year 2022 – 23

Choice Based Credit System (CBCS)

Code	Course Title	Course Type	HPW	Credits	Continuous Evaluation System					End Semester Marks	Practical Marks	Total Marks
					Internal Marks	Assignment Marks	Seminar Marks	Total Internal Marks				
BS 201	BASIC COMPUTER SKILLS	AECC – 2	2	2	15	--	--	15	35	---	50
BS 202	ENGLISH - II	CC – 1B	4	4	20	5	5	30	70	---	100
BS 203	SECOND LANGUAGE – II	CC – 2B	4	4	20	5	5	30	70	---	100
BS 204	OPTIONAL I MATHEMATICS – II	DSC – 1B	5 + 1*	5	20	5	5	30	70	---	100
BS 205	OPTIONAL II PHYSICS –II / STATISTICS – II	DSC – 2B	4 + 3	4 + 1	20	5	5	30	70	25	125
BS 206	OPTIONAL III COMPUTER SCIENCE – II / CHEMISTRY - II	DSC – 3B	4 + 3	4 + 1	20	5	5	30	70	25	125
	Total		30	25	115	30	30	165	385	50	600

*Tutorials: Problems solving session for each 20 student's one batch.

Chairperson

University Nominee

Dr. N. KISHAN
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Chairperson
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B.SC. MATHEMATICS 2ND Year III Semester (MPC / MPCS / MSCS)

Academic Year 2022 – 23

Choice Based Credit System (CBCS)

	Course Title	Course Type	HPW	Credits	Continuous Evaluation System				End Semester Marks	Practical Marks	Total Marks
					Internal Marks	Assignment Marks	Seminar Marks	Total Internal Marks			
BS 301	SEC I A) COMMUNICATION SKILLS OR B) Professional Skills	SEC – 1	2	2	15	--	--	15	35	---	50
BS 302	SEC II (SUBJECT) A) Theory of Equations OR B) Logic and Sets	SEC – 2	2	2	15	--	--	15	35	---	50
BS 303	ENGLISH - III	CC – 1C	3	3	20	5	5	30	70	---	100
BS 304	SECOND LANGUAGE - III	CC – 2D	3	3	20	5	5	30	70	---	100
BS 305	OPTIONAL I MATHEMATICS - III	DSC – 1C	5 + 1*	5	20	5	5	30	70	---	100
BS 306	OPTIONAL II PHYSICS – III / STATISTICS – III	DSC – 2C	4 + 3	4 + 1	20	5	5	30	70	25	125
BS 307	OPTIONAL III COMPUTER SCIENCE – III / CHEMISTRY - III	DSC – 3C	4 + 3	4 + 1	20	5	5	30	70	25	125
	Total		30	25	130	30	30	180	420	50	650

*Tutorials: Problems solving session for each 20 student's one batch.

Chairperson

University Nominee

Dr. N. KISHAN
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Chairperson
(BOS, Dept of Maths , OU)

... person
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Members

1. ......

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Principal

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B.SC. MATHEMATICS 2ND Year IV Semester (MPC / MPCS / MSCS)
Academic Year 2022 – 23
Choice Based Credit System (CBCS)

	Course Title	Course Type	HPW	Credits	Continuous Evaluation System				End Semester Marks	Practical Marks	Total Marks
					Internal Marks	Assignment Marks	Seminar Marks	Total Internal Marks			
BS 401	SEC III A) Leadership and Management Skills OR B) Universal Human Values	SEC – 3	2	2	15	--	--	15	35	---	50
BS 402	SEC IV (SUBJECT) A) Number Theory OR B) Vector Calculus	SEC – 4	2	2	15	--	--	15	35	---	50
BS 403	ENGLISH - IV	CC – 1D	3	3	20	5	5	30	70	---	100
BS 404	SECOND LANGUAGE - IV	CC – 2D	3	3	20	5	5	30	70	---	100
BS 405	OPTIONAL I MATHEMATICS - IV	DSC – 1D	5 + 1*	5	20	5	5	30	70	---	100
BS 406	OPTIONAL II PHYSICS – IV / STATISTICS – IV	DSC – 2D	4 + 3	4 + 1	20	5	5	30	70	25	125
BS 407	OPTIONAL II COMPUTER SCIENCE – IV / CHEMISTRY - IV	DSC – 3D	4 + 3	4 + 1	20	5	5	30	70	25	125
	Total		30	25	130	30	30	180	420	50	650

*Tutorials: Problems solving session for each 20 student's one batch.

Chairperson   University Nominee   Chairperson (BOS, Dept of Maths , OU)   Members   Principal

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B.SC. MATHEMATICS 3rd Year V Semester (MPC / MPCS / MSCS)

Academic Year 2022 – 23

Choice Based Credit System (CBCS)

	Course Title	Course Type	HPW	Credits	Continuous Evaluation System				End Semester Marks	Practical Marks	Total Marks
					Internal Marks	Assignment Marks	Seminar Marks	Total Internal Marks			
BS 501	A) BASIC MATHEMATICS (OR) B) MATHEMATICS FOR ECONOMICS & FINANCE	GE	4	4	20	5	5	30	70	---	100
BS 502	ENGLISH	CC - 1E	3	3	20	5	5	30	70	---	100
BS 503	SECOND LANGUAGE	CC – 2E	3	3	20	5	5	30	70	---	100
BS 504	OPTIONAL I A) LINEAR ALGEBRA OR B) COMPLEX ANALYSIS	DSE - 1E	5 + 1*	5	20	5	5	30	70	---	100
BS 505	OPTIONAL II PHYSICS / STATISTICS	DSE – 2E	4 + 3	4 + 1	20	5	5	30	70	25	125
BS 506	OPTIONAL III CHEMISTRY / COMPUTER SCIENCE	DSE – 3E	4 + 3	4 + 1	20	5	5	30	70	25	125
		Total	25	25	120	30	30	180	420	50	650

*Tutorials: Problems solving session for each 20 student's one batch.

Chairperson

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Code	Subject	DSE Code									Total
BS 604	OPTIONAL I A) NUMERICAL ANALYSIS OR B) INTEGRAL TRANSFORMS OR C) ANALYTICAL SOLID GEOMETRY	DSE – 1F	5 + 1*		20	5	5	30	70	---	100
BS 605	OPTIONAL II PHYSICS / STATISTICS	DSE – 2F	4 + 3	4 + 1	20	5	5	30	70	25	125
BS 606	OPTIONAL III CHEMISTRY / COMPUTER SCIENCE	DSE – 3F	4 + 3	4 + 1	20	5	5	30	70	25	125
	Total		25	25	120	30	30	180	420	50	650

*Tutorials: Problems solving session for each 20 student's one batch.

**The students are required to opt either the optional paper Mathematical Modeling or Project.

Chairperson

University Nominee

D. N. KISHAN
Professor & Head
Department of Mathematics
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Chairperson
(BOS, Dept of Maths , OU)

Kamala

Dr. ...
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... of Mathematics
... University
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Members

1.

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Principal

PRINCIPAL
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DSC - IA

BS104

Objective: The course is aimed at exposing the students to some basic notions in differential calculus.

Outcome: By the time students complete the course they realize wide ranging applications of the subject.

Unit- I

Partial Differentiation: Introduction - Functions of two variables - Neighborhood of a point (a, b) - Continuity of a Function of two variables, Continuity at a point - Limit of a Function of two variables - Partial Derivatives - Geometrical representation of a Function of two Variables - Homogeneous Functions.

Unit- II

Theorem on Total Differentials - Composite Functions - Differentiation of Composite Functions - Implicit Functions - Equality of $f_{xy}(a, b)$ and $f_{yz}(a, b)$ - Taylor's theorem for a function of two Variables - Maxima and Minima of functions of two variables – Lagrange's Method of undetermined - multipliers.

Unit- III

Curvature and Evolutes: Introduction - Definition of Curvature - Radius of Curvature - Length of Arc as a Function, Derivative of arc - Radius of Curvature - Cartesian Equations - Newtonian Method - Centre of Curvature - Chord of Curvature.

Envelopes: One Parameter Family of Curves - Consider the family of straight lines - Definition - Determination of Envelope- Two parameters connected by a relation.

Unit- IV

Curve Tracing: Introduction - procedure for tracing cartesian equations - Equations of the form $y=f(x)$ - Equations of the form $y^2 = f(x)$ - Parametric equations - Tracing of polar curves.

Evolutes: Evalutes and Involutes - Properties of the evolutes.

Text:
• Shanti Narayan, P.K. Mittal Differential Calculus, S.CHAND, NEW DELHI

References:
• William Anthony Granville, Percey F Smith and William Raymond Longley; Elements of the 5 differential and integral calculus
• Joseph Edwards , Differential calculus for beginners
• Smith and Minton, Calculus
• Elis Pine, How to Enjoy Calculus
• Hari Kishan, Differential Calculus

Chairperson	University Nominee	Chairperson	Members	Principal
	Dr N. KISHAN	(BOS, Dept of Maths , OU)	1.	
	Professor & Head		2.	
	Department of Mathematics			
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DSC-IB

BS204

Objective: The main aim of this course is to introduce the students to the techniques of solving differential equations and to train to apply their skills in solving some of the problems of engineering and science.

Outcome: After learning the course the students will be equipped with the various tools to solve few types differential equations that arise in several branches of science.

Unit- I

Differential Equations of first order and first degree: Introduction - Equations in which Variables are Separable - Homogeneous Differential Equations - Differential Equations Reducible to Homogeneous Form - Linear Differential Equations - Differential Equations Reducible to Linear Form Exact differential equations - Integrating Factors - Change in variables - Total Differential Equations - Simultaneous Total Differential Equations - Equations of the form $\frac{dx}{P} = \frac{dy}{Q} = \frac{dz}{R}$

Unit- II

Differential Equations first order but not of first degree: Equations Solvable for p - Equations Solvable for y - Equations Solvable for x - Equations that do not contain x (or y) - Equations Homogeneous in x and y - Equations of the First Degree in x and y - Clairaut's equation. Geometrical problems - data examples - problems relating to trajectories - Trajectories - rectongular co-ordinates - Orthogonal trajectories - Polar co-ordinates.

Unit- III

Higher order Linear Differential Equations: Solution of homogeneouslinear differential equations with constant coefficients - Solution of non-homogeneous differential equations P (D)y = Q(x) with constant coefficients by means of polynomial operators when Q(x) = be^{ax}, b sin ax or b cos ax , bx^{k}, V e^{ax} - Method of undetermined coefficients.

Unit- IV

Method of variation of parameters - Linear differential equations with non constant coefficients - The Cauchy - Euler Equation - Legendre's Linear Equations.

Partial Differential Equations: Formation and solution- Equations easily integrable - Linear equations of first order- Non linear equation of first order - Charpit's Method.

Text:
• Zafar Ahsan,Differential Equations and Their Applications

References
Frank Ayres Jr, Theory and Problems of Differential Equations.
• Ford, L.R ; Differential Equations.7
• Daniel Murray, Differential Equations.
• S. Balachandra Rao, Differential Equations with Applications and Programs.
• Stuart P Hastings, J Bryce McLead; Classical Methods in Ordinary Differential Equations.

Chairperson	University Nominee	Chairperson (BOS, Dept of Maths , OU)	Members	Principal

Dr. N. XXXHAN
Professor & Head
Department of Mathematics
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HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
B.Sc. II Year Semester – III
MATHEMATICS Paper II
Theory of Equations

SEC-II

BS302A

Objective: Students learn the relation between roots and coefficients of a polynomial equation, Descartes's rule of signs in finding the number of positive and negative roots if any of a polynomial equation besides some other concepts.

Outcome: By using the concepts learnt the students are expected to solve some of the polynomial equations.

Unit- I

Graphic representation of a polynomial-Maxima and minima values of polynomials-Theorems relating to the real roots of equations-Existence of a root in the general equation -Imaginary roots-Theorem determining the number of roots of an equation-Equal roots-Imaginary roots enter equations in pairs-Descartes' rule of signs for positive roots- Descartes' rule of signs for negative roots.

Unit- II

Relations between the roots and coefficients-Theorem-Applications of the theorem-Depression of an equation when a relation exists between two of its roots-The cube roots of unity Symmetric functions of the roots-examples.

Text:
W.S. Burnside and A.W. Panton, *The Theory of Equations*
References:
C. C. Mac Duffee, *Theory of Equations*
Hall and Knight , *Higher Algebra*

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HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
B.Sc. II Year Semester – III
MATHEMATICS Paper II
Logic and Sets

SEC – II

BS302B

Objective: Students learn some concepts in set theory and logic.
Outcome: After the completion of the course students appreciate its importance in the development of computer science.

Unit- I

Basic Connectives and truth tables - Logical equivalence : Laws of Logic - Logical Implication : Rules Inference : The Use of Quantifiers - Quantifiers, Definitions, and proofs of Theorems.

Unit- II

Sets and Subsets - Set Operations and the Laws of Set Theory - Counting and Venn Diagrams -   A First Word on Probability - The axioms of Probability - Conditional Probability: Independence Discrete Random variables .

Text: Ralph P Grimaldi,*Discrete and Combinatorial Mathematics* (5e)

References:

P R Halmos, *Naïve Set Theory*
E Kamke , *Theory of Sets*

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DSC-IC

BS305

Objective: The course is aimed at exposing the students to the foundations of analysis which will be useful in understanding various physical phenomena.

Outcome: After the completion of the course students will be in a position to appreciate beauty and applicability of the course.

Unit- I

Sequences: Limits of Sequences – A Discussion about Proofs – Limit Theorems for Sequences - Monotone Sequences and Cauchy Sequences – Subsequences - Limsup's and Liminf's – Series – Alternating Series and Integral Tests.

Unit- II

Continuity: Continuous Functions – Properties of Continuous Functions – Uniform Continuity – Limits of functions

Unit- III

Differentiation: Basic Properties of the Derivative – The Mean Value Theorem - L'Hospital Rule -Taylor's Theorem.

Unit IV

Integration: The Riemann Integral- Properties of Riemann Integral-Fundamental Theorem of Calculus.

Text: Kenneth A Ross, Elementary Analysis – The Theory of Calculus

References:

1. S.C. Malikand Savita Arora, Mathematical Analysis, Second Edition, Wiley Eastern Limited, New Ag eInternational(P) Limited, New Delhi,1994.

2. William F.Trench, Introduction to Real Analysis .

3. Lee Larson, Introduction to Real AnalysisI .

4. Shanti Narayan and Mittal, Mathematical Analysis .

5. Brian S.Thomson,Judith B.Bruckner,Andrew M.Bruckner; Elementary Real analysis

6. Sudhir R.,Ghorpade,Balmohan V.,Limaye; A Course in Calculus and Rea lAnalysis

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HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
B.Sc. II Year Semester – IV
MATHEMATICS Paper IV
Number Theory

SEC-IV

BS402A

Objective: Students will be exposed to some of the jewels like Fermat's theorem, Euler's theorem in the number theory.

Outcome: Student uses the knowledge acquired solving some divisor problems.

Unit- I

The Goldbach conjecture - Basic properties of congruences- Binary and Decimal Representation of Integers - Number Theoretic Functions; The Sum and Number of divisors- The Mobius Inversion Formula- The Greatest integer function.

Unit- II

Euler's generalization of Fermat's Theorem: Euler's Phi function- Euler's theorem Some Properties of the Euler's Phi function.

Text: David M Burton,*Elementary Number Theory* (7e)

References:
Thomas Koshy, *Elementary Number Theory and its Applications*
Kenneth H Rosen, *Elementary Number Theory*

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HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
B.Sc. II Year Semester – IV
MATHEMATICS Paper IV
Vector Calculus

SEC-IV

BS402B

Objective: Concepts like gradient, divergence, curl and their physical relevance will be taught.

Outcome: Students realize the way vector calculus is used to addresses some of the problems of physics.

Unit- I
Line Integrals: Introductory Example - Work done against a Force-Evaluation of Line Integrals Conservative Vector Fields.
Surface Integrals: Introductory Example : Flow Through a PipeEvaluation of Surface Integrals.

Unit- II
Volume Integrals: Evaluation of Volume integrals
Gradient, Divergence and Curl: Partial differentiation and Taylor series-Partial differentiation Taylor series in more than one variable-Gradient of a scalar field-Gradients, conservative fields and potentials-Physical applications of the gradient.

Text: P.C. Matthews, *Vector Calculus*

References:
G.B. Thomas and R.L. Finney, *Calculus*
H. Anton, I. Bivens and S. Davis ; *Calculus*
Smith and Minton, *Calculus*

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Algebra

DSC-ID

BS405

Objective: The course is aimed at exposing the students to learn some basic algebraic structures like groups, rings etc.

Outcome: On successful completion of the course students will be able to recognize algebraic structures that arise in matrix algebra, linear algebra and will be able to apply the skills learnt in understanding various such subjects.

Unit- I

Groups: Definition and Examples of Groups – Elementary Properties of Groups – Finite Groups - Subgroups –Terminology and Notation – Subgroup Tests – Examples of Subgroups. Cyclic Groups: Properties of Cyclic Groups – Classification of Subgroups Cyclic Groups.

Unit- II

Permutation Groups: Definition and Notation – Cycle Notation – Properties of Permutations - A Check Digit Scheme Based on D5. Isomorphisms; Motivation – Definition and Examples - Cayley's Theorem Properties of Isomorphisms – Automorphisms – Cosets and Lagrange's Theorem Properties of Cosets Lagrange's Theorem and Consequences – An Application of Cosets to Permutation Groups –The Rotation Group of a Cube and a Soccer Ball.

Unit- III

Normal Subgroups and Factor Groups: Normal Subgroups-Factor Groups - Applications of Factor Groups -Group Homomorphisms - Definition and Examples -Properties of Homomorphisms -The First Isomorphism Theorem.
Introduction to Rings: Motivation and Definition -Examples of Rings -Properties of Rings - Subrings.
Integral Domains: Definition and Examples - Fields –Characteristics of a Ring.

Unit- IV

Ideals and Factor Rings: Ideals -Factor Rings -Prime Ideals and Maximal Ideals.
Ring Homomorphisms: Definition and Examples-Properties of Ring - Homomorphisms

Text: Joseph A Gallian, *Contemporary Abstract algebra (9th edition)*

References:

1) Bhattacharya, P.B Jain, S.K.; and Nagpaul, S.R,Basic Abstract Algebra
2) Fraleigh, J.B, A First Course in Abstract Algebra.
3) Herstein, I.N, Topics in Algebra
4) Robert B. Ash, Basic Abstract Algebra
5) I Martin Isaacs, Finite Group Theory
6) Joseph J Rotman, Advanced Modern Algebra

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HINDI MAHAVIDYALAYA (AUTONOMOUS)
NALLAKUNTA, HYDERABAD
B.Sc.III Year Semester – V
BASIC MATHEMATICS

GE

BS501A

Objective: Students learn the techniques which have been applied successfully to an increasingly wide variety of complex problems in business. Also learn the scientific approach to managerial decision making.

Outcome: Student realizes how the quantitative analysis will be an aid to decision-making process. Also the quantitative analysis how it will be linked with other information in making decisions.

Unit- I

Coordinate Geometry: Fundamentals – Cartesian Coordinates system – Polar Coordinates – Distance Formula – Section Formula -Centroid of a Triangle – Area of a Triangle.(Chapter 11)

Unit- II

Straight Line: Introduction - Definitions of the Terms - Different Forms of the Equations of a Straight Line - Distance of a point from a Straight Line - Angle between two Lines and Condition of Parallelism and Perpendicularity of Lines - Point of intersection of Two Lines – Condition of Concurrency of Three Given Straight Lines - Position of a Point with respect to a given Line.(Chapter 13)

Unit- III

Matrices: Introduction - Definitions and Notations - Operations on Matrices - Determinant of a Square Matrix - Non Singular matrix and Singular Matrix - Sarrus Diagram for Expansion of Determinant of a matrix 3X3 - Properties of Determinants.(15.1,15.2,15.3,15.5.1,15.5.2,15.5.3 of Chapter 15)

Unit- IV

Linear System of Equations: Conversion of a business problem into a Linear System of Equations – Rank of a Matrix – Application of Rank concept – Minor and Cofactor – Adjoint of a Square matrix -Inverse of a Square Matrix – Matrix Equation – Methods to Solve Linear System of Equations – Solution to the linear system of Equations – Types of Solutions - Crammer's rule - Matrix Inversion method. (15.4,15.5.4,15.5.5,15.5.6,15.5.7,15.5.8,15.6,15.7.1,15.7.2,15.7.3,15.7.4,15.7.4 of Chapter 15).

Text: • P. Mariappan , Business Mathematics, Pearson Publication 2015, New Delhi

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NALLAKUNTA, HYDERABAD
B.Sc.III Year Semester – V
MATHEMATICS FOR ECONOMICS AND FINANCE

GE

BS501B

Objective: Many models and problems in modern economics and finance can be expressed using the language of mathematics and analyzed using mathematical techniques. The aim is to show how a range of important mathematical techniques work and how they can be used to explore and understand the structure of economic models.

Outcome: Student were chiefly interested in learning the mathematics that had applications to economics and finance. Students gain a familiarity with economics and finance principles and are confident in applying them.

Unit- I

Linear Equations: Introduction – Solution of Linear Equations – Solutions of Simultaneous Linear Equations – Graphs of Linear Equations – Budget Lines – Supply and Demand Analysis . Quadratic Equations: Introduction – Graphs of Quadratic Functions – Quadratic Equations - Applications to Economics.

Unit- II

Functions of a Single Variable: Introduction – Limits – Polynomial Functions – Reciprocal Functions – Inverse Functions. The Exponential and Logarithmic Functions: Introduction – Exponential Functions – Logarithmic Functions – Returns to Scale of Production Functions – Compounding of Interest.

Unit- III

Matrices and Determinants: Introduction – Matrix Operations – Solutions of Linear Systems of Equations – Cramer's Rule – More Determinants – Special Cases.

Unit-IV

Linear Difference Equations: Introduction – Difference Equations – First Order Linear Difference Equations.

Text:

• Vassilis. C. Mavron and Timothy N.Phillips, Elements of Mathematics for Economics and Finance: Springer Publishers.

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NALLAKUNTA, HYDERABAD
B.Sc. III Year Semester – V
MATHEMATICS Paper V
LINEAR ALGEBRA

DSE – IE

BS504 A

Objective: The students are exposed to various concepts like vector spaces, bases, dimension, Eigen values etc.

Outcome: After completion this course students appreciate its interdisciplinary nature.

Unit- I
Vector Spaces: Vector Spaces and Subspaces -Null Spaces, Column Spaces, and Linear Transformations -Linearly Independent Sets; Bases -Coordinate Systems -The Dimension of a Vector Space

Unit- II
Rank-Change of Basis - Eigenvalues and Eigenvectors - The Characteristic Equation

Unit- III
Diagonalization -Eigenvectors and Linear Transformations - Complex Eigenvalues-Applications to Differential Equations.

Unit- IV
Orthogonality and Least Squares: Inner Product, Length, and Orthogonality -Orthogonal Sets - Orthogonal Projections - The Gram-Schmidt Process.

Text:
• David C Lay,Linear Algebra and its Applications 4e References:
• S Lang, Introduction to Linear Algebra
• Gilbert Strang , Linear Algebra and its Applications
• Stephen H. Friedberg, Arnold J. Insel, Lawrence E. Spence; Linear Algebra
• Kuldeep Singh; Linear Algebra
• Sheldon Axler; Linear Algebra Done Right

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DSE – IE

BS504 B

Objective: Analytic Functions, contour integration and calculus of residues will be introduced to the students.

Outcome: Students realize calculus of residues is one of the power tools in solving some problems, like improper and definite integrals, effortlessly.

Unit- I

Sums and Products- Basic Algebraic Properties – Further Properties – Vectors and Moduli – Complex Conjugates – Exponential Form – Products and Power in Exponential Form – Arguments of Products – and Quotients – Roots of Complex Numbers – Examples - Regions in the Complex Plane

Unit – II

Analytic Functions - Functions of a Complex Variable - Mappings - Mappings by the Exponential Function - Limits - Theorems on Limits - Limits Involving the Point at Infinity - Continuity - Derivatives - Differentiation Formulas - Cauchy-Riemann Equations - Sufficient Conditions for Differentiability - Polar Coordinates-Harmonic Functions. Elementary Functions: The Exponential Function - The Logarithmic Function - Branches and Derivatives of Logarithms - Some Identities Involving Logarithms Complex Exponents - Trigonometric Functions - Hyperbolic Functions.

Unit- III

Integrals: Derivatives of Functions w(t) - Definite Integrals of Functions w(t) - Contours - Contour Integrals - Some Examples - Examples with Branch Cuts - Upper Bounds for Moduli of Contour Integrals - Antiderivatives.

Unit- IV

Cauchy - Goursat Theorem - Proof of the Theorem - Simply Connected Domains - Multiply Connected Domains - Cauchy Integral Formula - An Extension of the Cauchy Integral Formula - Some Consequences of the Extension - Liouville's Theorem and the Fundamental Theorem of Algebra Maximum Modulus Principle.

Text:

- James Ward Brown and Ruel V. Churchill, Complex Variables and Applications (8e) References:
- Joseph Bak and Donald J Newman. Complex analysis
- Lars V Ahlfors . Complex Analysis
- S.Lang. Complex Analysis
- B Choudary. The Elements Complex Analysis

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HINDI MAHAVIDYALAYA (AUTONOMOUS)
NALLAKUNTA, HYDERABAD
B.Sc. III Year Semester – VI
Mathematical Modelling

Project/ Optional – VI

BS601

Objective: This topic is aims to provide the student with some basic modelling skills that will have application to a wide variety of problems.

Outcome: The focus is on those mathematical techniques that are applicable to models involving differential equations, and which describe rates of change. Student realizes some beautiful problems can be modeled by using differential equations. The students also learn how to use the mathematical technique in solving differential equations.

Unit- I

Introduction to Mathematical Modelling: Mathematical Models-Modelling for decision making. Compartmental Models:-Exponential decay and radioactivity – Case Study: Detecting art forgeries – Lake Pollution Models - First order Linear Differential Equations – Equilibrium points and stability.

Unit- II

Models of Single Populations: Exponential growth – Density-dependent growth – Limited growth with harvesting. Interacting Population Models: Model for an influenza outbreak – Case Study: Cholera – Predators and prey – Competing Species.

Unit- III

Formulating Heat and Mass Transport Models: Some basic physical laws -Model for a hot water heater-Heat conduction and Fourier's Law - Heat conduction through a wall – Radiative heat conduction - Diffusion.

Unit- IV

Boundary Value Problems – Heat loss through a wall – Insulating a water pipe – Introduction to Partial Differential Equations: The heat conduction equation – Oscillating soil temperatures – Case study: Detecting Land Mines – Lake Pollution.

Text:

1. B.Barnes and G.R.Fulford, Mathematical Modelling with Case Studies 3rd Edition, 2009, CRC press. References: • 1. Shepley L. Ross, "Differential Equations".
2. I. Sneddon , Elements of Partial Differential Equations
3. Zafar Ahsan. "Differential Equations and their Applications"

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NALLAKUNTA, HYDERABAD
B.Sc. III Year Semester – VI
MATHEMATICS Paper VI
NUMERICAL ANALYSIS

DSE – IF   BS604 A

Objective: Students will be made to understand some methods of numerical analysis.

Outcome: Students realize the importance of the subject in solving some problems of algebra and calculus.

Unit- I

Errors in Numerical Calculations - Solutions of Equations in One Variable: The Bisection Method - The Iteration Method - The Method of False Position-Newton's Method - Muller's Method - solution of Systems of Nonlinear Equations.

Unit- II

Interpolation and Polynomial Approximation: Interpolation-Finite Differences-Differences of Polynomials - Newton's formula for Interpolation - Gauss's central differences formulae - Stirling's and Bessel's formula - Lagrange's Interpolation Polynomial - Divided Differences - Newton's General Interpolation formula - Inverse Interpolation.

Unit- III

Curve Fitting: Least Square Curve Fitting: Fitting a Straight Line-Nonlinear Curve Fitting. Numerical Differentiation and Integration: Numerical Differentiation –Numerical Integration: Trapezoidal Rule-Simpson's 1/3rd-Rule and Simpson's 3/8th-Rule - Boole's and Weddle's Rule - Newton's Cotes Integration Formulae.

Unit- IV

Numerical Solutions of Ordinary Differential Equations: Taylor's Series Method - Picard's Method - Euler's Methods – Runge - Kutta Methods.

Text:

- S.S.Sastry , Introductory Methods of Numerical Analysis, PHI References:
- Richard L. Burden and J. Douglas Faires, Numerical Analysis (9e)
- M K Jain, S R K Iyengar and R K Jain, Numerical Methods for Scientific and Engineering computation
- B.Bradie , A Friendly introduction to Numerical Analysis

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B.Sc. III Year Semester – VI
MATHEMATICS Paper VI
INTEGRAL TRANSFORMS

DSE – IF

BS604B

Objective: Students will be exposed to Integral Transforms. The students also learning the Applications of Laplace Transforms to Differential Equations which arises in Physics and Engineering Problems.

Outcome: Students apply their knowledge to solve some problems on special functions and Differential Equations by using the Integral Transforms.

Unit- I

Laplace Transforms-Definition-Existence theorem-Laplace transforms of derivatives and integrals – Periodic functions and some special functions.

Unit- II

Inverse Transformations - Convolution theorem - Heaviside's expansion formula.

Unit- III

Applications to ordinary differential equations - solutions of simultaneous ordinary differential equations - Applications to Partial differential equations.

Unit- IV

Fourier Transforms- Sine and cosine transforms-Inverse Fourier Transforms.

Text:

• Vasishtha and Gupta, Integral Transforms, Krishna Prakashan Media (P), Ltd, Meerut (2e)

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B.Sc. III Year Semester – VI
MATHEMATICS Paper VI
Analytical Solid Geometry

DSE – IF

BS604C

Objective: Students learn to describe some of the surfaces by using analytical geometry.
Outcome: Students understand the beautiful interplay between algebra and geometry.

Unit- I
Sphere: Definition-The Sphere through Four Given Points-Equations of a Circle- Intersection of a Sphere and a Line-Equation of a Tangent Plane-Angle of Intersection of Two Spheres-Radical Plane.

Unit- II
Cones and Cylinders: Definition-Condition that the General Equation of second degree represents a Cone-Cone and a Plane through its Vertex -Intersection of a Line with a Cone.

Unit- III
The Right Circular Cone-The Cylinder- The Right Circular Cylinder.

Unit- IV
The Conicoid: The General Equation of the Second Degree-Intersection of Line with a Conicoid Plane of contact-Enveloping Cone and Cylinder.

Text:
• Shanti Narayan and P K Mittal, Analytical Solid Geometry (17e)

References:
• Khaleel Ahmed, Analytical Solid Geometry
• S L Loney , Solid Geometry
• Smith and Minton, Calculus

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HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD (AUTONOMOUS)

B.Sc. II Year Semester – III
MATHEMATICS Paper I
Communication Skills

SEC I

BS301A

Context and Justification :

Communication plays an important role in shaping an individual's life, personal as well as professional. Also it is the backbone of any organisation/institution. Success in life to a considerable extent depends on effective communication skills. In today's world of computers and digital media, a strong communication skill base is essential for learners and for smooth functioning of an organisation.

Objectives :

This course has been developed with the following objectives:

1. Identify common communication problems that may be holding learners back
2. Identify what their non-verbal messages are communicating to others
3. Understand role of communication in teaching-learning process
4. Learning to communicate through the digital media
5. Understand the importance of empathetic listening
6. Explore communication beyond language.

Expected Outcome :

By the end of this program participants should have a clear understanding of what good communication skills are and what they can do to improve their abilities.

Credit: 02

Duration: 30 Hours

Number & Titles of Modules:

Total of 7 Modules

Module 1	Listening	4 Hours
Module 2	Speaking	6 Hours
Module 3	Reading	3 Hours
Module 4	Writing and different modes of writing	4 Hours
Module 5	Digital Literacy	4 Hours
Module 6	Effective use of Social Media	4 Hours
Module 7	Non-verbal communication	5 Hours

Module Outline :

Module 1: Listening
4 Hours

- Techniques of effective listening
- Listening and comprehension
- Probing questions
- Barriers to listening

Module 2: Speaking
6 Hours

- Pronunciation
- Enunciation
- Vocabulary
- Fluency
- Common Errors

Module 3: Reading
3 Hours

- Techniques of effective reading
- Gathering ideas and information from a given text
    i. Identify the main claim of the text
    ii. Identify the purpose of the text
    iii. Identify the context of the text
    iv. Identify the concepts mentioned
- Evaluating these ideas and information
    i. Identify the arguments employed in the text
    ii. Identify the theories employed or assumed in the text
- Interpret the text
    i. To understand what a text says
    ii. To understand what a text does
    iii. To understand what a text means

Module 4: Writing and different modes of writing
4 Hours

- Clearly state the claims
- Avoid ambiguity, vagueness, unwanted generalisations and oversimplification of issues
- Provide background information
- Effectively argue the claim
- Provide evidence for the claims
- Use examples to explain concepts
- Follow convention
- Be properly sequenced
- Use proper signposting techniques
- Be well structured
    i. Well-knit logical sequence
    ii. Narrative sequence
    iii. Category groupings

- Different modes of Writing
  i. E-mails
  ii. Proposal writing for Higher Studies
  iii. Recording the proceedings of meetings
  iv. Any other mode of writing relevant for learners

Module 5: Digital Literacy

4 Hours

- Role of Digital literacy in professional life
- Trends and opportunities in using digital technology in workplace
- Internet Basics
- Introduction to MS Office tools
  i. Paint
  ii. Office
  iii. Excel
  iv. Powerpoint

Module 6: Effective use of Social Media

4 Hours

- Introduction to social media websites
- Advantages of social media
- Ethics and etiquettes of social media
- How to use Google search better
- Effective ways of using Social Media
- Introduction to Digital Marketing

Module 7: Non-verbal communication

5 Hours

- Meaning of non-verbal communication
- Introduction to modes of non-verbal communication
- Breaking the misbeliefs
- Open and Closed Body language
- Eye Contact and Facial Expression
- Hand Gestures
- Do's and Don'ts
- Learning from experts
- Activities-Based Learning

Pedagogy : Instructor-Led Training, Supplemented by Online Platform (SWAYAM)

Materials : Teaching & Learning

Assessment : Paper-Based or Online Assessment

Bibliography &Suggested Reading including audio video material :

Books

- Sen Madhucchanda (2010), *An Introduction to Critical Thinking*, Pearson, Delhi
- Silvia P. J. (2007), *How to Read a Lot*, American Psychological Association, Washington DC

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B.Sc. II Year Semester – III
MATHEMATICS Paper I
Professional Skills

SEC-I

BS 301B

Context with Justification :

One of the significant outcomes of Higher Education is to prepare an individual for entering the job/employment market. Besides knowledge and skills required for a particular job/occupation, professional skills are also required for an individual to be gainfully employed for a successful and satisfied life. Professional skills are part of life skills. An individual should be able to demonstrate professional skills involving the use of intuitive, logical and critical thinking, communication and interpersonal skills, not limited to cognitive/creative skills. These skills, behaviour and quality of output enhance employability.

The career skills empower an individual with ability in preparing an appropriate resume, addressing the necessary gaps for facing interviews and actively and effectively participating in group discussion thereof, etc. It is also of significant importance that students /individuals possess the know-how to explore career opportunities for themselves, considering their innate strengths and weaknesses.

It is important that the students/individuals are well prepared to take on new challenges and opportunities. With the increasing use of technology in the way we live, learn and work, it is critical for students/individuals to be able to utilise basic computing concepts and also have and espouse excellent Team Skills. Collaborating and working together can assist in resolving complex problems, which allow/offer individuals an opportunity to articulate new ideas and perspectives. It further allows allow learner / individuals design, develop, problem solve and to adapt to situations based on their experience and skills.

Credit: 02

Duration:30 hours

The Course Professional Skills is divided into two parts:

a) Career Skills

b) Team Skills

A. Career Skills

Objectives :

The Objectives of the course are to help students/candidates:

1. Acquire career skills and fully pursue to partake in a successful career path

2. Prepare good resume, prepare for interviews and group discussions

3. Explore desired career opportunities in the employment market in consideration of an individual SWOT.

Expected Outcomes :

At the end of this course the students will be able to:

1. Prepare their resume in an appropriate template without grammatical and other errors and using proper syntax
2. Participate in a simulated interview
3. Actively participate in group discussions towards gainful employment
4. Capture a self - interview simulation video regarding the job role concerned
5. Enlist the common errors generally made by candidates in an interview
6. Perform appropriately and effectively in group discussions
7. Explore sources (online/offline) of career opportunities
8. Identify career opportunities in consideration of their own potential and aspirations
9. Use the necessary components required to prepare for a career in an identified occupation (as a case study).

Duration: 15 Hours

Number & Titles of Modules:

Module 1	**Resume Skills**	**3 Hours**
Module 2	**Interview Skills**	**5 Hours**
Module 3	**Group Discussion Skills**	**4 Hours**
Module 4	**Exploring Career Opportunities**	**3 Hours**

Module Outline :

Module 1: Resume Skills   3 Hours

    i. **Resume Skills : Preparation and Presentation**

- Introduction of resume and its importance
- Difference between a CV, Resume and Bio data
- Essential components of a good resume

    ii. **Resume skills : common errors**

- Common errors people generally make in preparing their resume
- Prepare a good resume of her/his considering all essential components

Module 2: Interview Skills   5 Hours

    i.   Interview Skills : Preparation and Presentation

- Meaning and types of interview (F2F, telephonic, video, etc.)
- Dress Code, Background Research, Do's and Don'ts
- Situation, Task, Approach and Response (STAR Approach) for facing an interview
- Interview procedure (opening, listening skills, closure, etc.)
- Important questions generally asked in a job interview (open and closed ended questions)

ii. **Interview Skills : Simulation**
   - Observation of exemplary interviews
   - Comment critically on simulated interviews

iii. **Interview Skills : Common Errors**
   - Discuss the common errors generally candidates make in interview
   - Demonstrate an ideal interview

Module 3: Group Discussion Skills   4 Hours

- Meaning and methods of Group Discussion
- Procedure of Group Discussion
- Group Discussion- Simulation
- Group Discussion - Common Errors

Module 4: Exploring Career Opportunities   3 Hours

- Knowing yourself – personal characteristics
- Knowledge about the world of work, requirements of jobs including self-employment.
- Sources of career information
- Preparing for a career based on their potentials and availability of opportunities

Pedagogy : Besides Face to Face lectures (theory would be limited only to 20% of the component and remaining 80% would be practical oriented), the focus would be primarily on blended /hybrid learning. This could include a flipped classroom approach that leverages project-based learning, demonstration, group discussion, simulations etc.

Materials : Audio video materials, Online Platform (SWAYAM), FutureSkills Platform, Used Cases & Case Studies etc.

Assessment: Online evaluation, demonstration, assignments : Some components could be aligned to NOS (SSC/N9005) IT-ITeS Sector . The questions posed to the students would be a mix of MCQs, scenario-based, logical reasoning, comprehension, simulations, etc. Do check the assessment model and sample assessment at (http://nac.nasscom.in/)

Bibliography & Suggested Reading including audio video material :
Please check IT-ITeS Sector Skills Council readiness programs namely

- Foundation Skills In IT (FSIT) – Refer the websites like https //www.sscnasscom.com/ ssc-projects/capacity-building-and-development/training/fsit/ and

- Global Business Foundation Skills (GBFS) – Refer websites like https //www.sscnasscom. com/ssc-projects/capacity-building-and-development/training/gbfs/

B. Team Skills

Objectives :

The objectives of the course is to make learners:

1. Understand the significance of Team Skills and help them in acquiring them
2. To help them design, develop and adapt to situations as an individual and as a team.

Expected Outcomes :

By the end of this course the learners/candidates will be able to:

1. Use common technology messaging tools that are used in enterprises for flow of information and transition from command and control to informal communication during an online/offline team session

2. Actively use and operate online team communication tools: Webinar, Skype, Zoom, Google hangout etc

3. Appreciate and demonstrate Team Skills

4. Participate in a digital lifestyle conversant with computers, applications, Internet and nuances of cyber security

5. Explore (online) and identify career opportunities in consideration of their own potential and aspirations.

6. Discuss and articulate the key requirements of an entrepreneurial exercise

7. Empathise and trust colleagues for improving interpersonal relations

8. Engage in effective communication by respecting diversity and embracing good listening skills

9. Distinguish the guiding principles for communication in a diverse, smaller internal world

10. Practice interpersonal skills for better relations with seniors, juniors, peers and stakeholders

11. Project a good personal image and social etiquette so as to have a positive impact on building of one's chosen career

12. Generate, share and maximise new ideas with the concept of brainstorming and the documentation of key critical ideas/thoughts articulated and action points to be implemented with timelines in a team discussion (as MOM) in identified applicable templates.

Duration: 15 Hours

Number & Titles of Modules:

Module 1	Presentation Skills	5 Hours
Module 2	Trust and Collaboration	2 Hour
Module 3	Listening as a Team Skill	2 hour
Module 4	Brainstorming	2 Hour
Module 5	Social and Cultural Etiquettes	2 Hour
Module 6	Internal Communication	2 Hour

Module Outline :

Module 1: Presentation Skills   5 Hours

- Types of presentations
- Internal and external presentation
- Knowing the purpose
- Knowing the audience
- Opening and closing a presentation
- Using presentation tools
- Handling questions
- Presentation to heterogenic group
- Ways to improve presentation skills over time

Module 2: Trust and Collaboration   2 Hours

- Explain the importance of trust in creating a collaborative team
- Agree to Disagree and Disagree to Agree – Spirit of Team work
- Understanding fear of being judged and strategies to overcome fear

Module 3: Listening as a Team Skill   2 Hours

- Advantages of Effective Listening
- Listening as a team member and team leader. Use of active listening strategies to encourage sharing of ideas (full and undivided attention, no interruptions, no pre-think, use empathy, listen to tone and voice modulation, recapitulate points, etc.).

Module 4: Brainstorming

2 Hour

- Use of group and individual brainstorming techniques to promote idea generation.
- Learning and showcasing the principles of documentation of team session outcomes

Module 5: Social and Cultural Etiquette

2 Hour

- Need for etiquette (impression, image, earn respect, appreciation, etc)
- Aspects of social and cultural/corporate etiquette in promoting teamwork
- Importance of time, place, propriety and adaptability to diverse cultures

Module 6: Internal Communication

2 Hour

- Use of various channels of transmitting information including digital and physical, to team members.

Pedagogy : Besides Face to Face Lectures (as theory would be limited only to 20% of the component and remaining 80% would be practical oriented), the focus would be primarily on blended learning/hybrid learning. This could include a flipped classroom approach that leverage project based learning, demonstration, group discussion, simulation as well as coaching, seminars and tutorials.

Materials : Audio video materials, Online Platform (SWAYAM), Future Skills platform

Assessment: Written evaluation, demonstration, assignments: Some components aligned to NOS (SSC/N9005) IT-ITeS . The questions posed to the students would be a mix of MCQs, Scenario-based, logical reasoning, comprehension, simulations, etc. Do check the assessment at website like (http://nac.nasscom.in/)

Bibliography & Suggested Reading including audio video material : Please check IT-ITeS Sector Skills Council readiness program namely Global Business Foundation Skills (GBFS) in website (https://www.sscnasscom.com/ssc-projects/capacity-building-and-development/training/gbfs/),and Generic and the entrepreneurial NOS at NSQF Level 4 -7.

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HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD (AUTONOMOUS)

B.Sc. II Year Semester – IV

SEC-III

Leadership and Management Skills

BS401A

Context with Justification :

Leaders are foundations of the society, who face and win against adversities and odds of life. Through their words and deeds, they show path to others and transform into inspirational role models, affecting social life vividly. In the current times of cut-throat competitions, disbelief in values, techno-centric complex lifestyles, there is a dire need to emphasise the 'human' agency in community living. This can be done by cultivating and nurturing the innate leadership skills of the youth so that they may transform these challenges into opportunities and become torch bearers of the future by developing creative solutions.

Objectives :

The Module is designed to:

- ➤ Help students to develop essential skills to influence and motivate others
- ➤ Inculcate emotional and social intelligence and integrative thinking for effective leadership
- ➤ Create and maintain an effective and motivated team to work for the society
- ➤ Nurture a creative and entrepreneurial mindset
- ➤ Make students understand the personal values and apply ethical principles in professional and social contexts.

Expected Outcomes :

Upon completion of the course students will be able to:

1. Examine various leadership models and understand/assess their skills, strengths and abilities that affect their own leadership style and can create their leadership vision
2. Learn and demonstrate a set of practical skills such as time management, self management, handling conflicts, team leadership, etc.
3. Understand the basics of entrepreneurship and develop business plans
4. Apply the design thinking approach for leadership
5. Appreciate the importance of ethics and moral values for making of a balanced personality.

Credit: 02

Duration: 30 Hours

Number & Titles of Modules:

Module 1	Leadership Skills	6 Hours
Module 2	Managerial Skills	6 Hours
Module 3	Entrepreneurial Skills	6 Hours
Module 4	Innovative Leadership and Design Thinking	6 Hours
Module 5	Ethics and Integrity	6 Hours

Module Outline :

Module 1- Leadership Skills   6 Hours
- a. Understanding Leadership and its Importance
  - What is leadership?
  - Why Leadership required?
  - Whom do you consider as an ideal leader?
- b. Traits and Models of Leadership
  - Are leaders born or made?
  - Key characteristics of an effective leader
  - Leadership styles
  - Perspectives of different leaders
- c. Basic Leadership Skills
  - Motivation
  - Team work
  - Negotiation
  - Networking

Module 2 - Managerial Skills   6 Hours
- a. Basic Managerial Skills
  - Planning for effective management
  - How to organise teams?
  - Recruiting and retaining talent
  - Delegation of tasks
  - Learn to coordinate
  - Conflict management
- b. Self Management Skills
  - Understanding self concept
  - Developing self-awareness
  - Self-examination
  - Self-regulation

Module 3 - Entrepreneurial Skills   6 Hours
- a. Basics of Entrepreneurship
  - Meaning of entrepreneurship
  - Classification and types of entrepreneurship
  - Traits and competencies of entrepreneur
- b. Creating Business Plan
  - Problem identification and idea generation
  - Idea validation
  - Pitch making

Module 4 - Innovative Leadership and Design Thinking   6 Hours
- a. Innovative Leadership
  - Concept of emotional and social intelligence

- Synthesis of human and artificial intelligence
- Why does culture matter for today's global leaders

b. Design Thinking

- What is design thinking?
- Key elements of design thinking:
  - Discovery
  - Interpretation
  - Ideation
  - Experimentation
  - Evolution.
- How to transform challenges into opportunities?
- How to develop human-centric solutions for creating social good?

Module 5- Ethics and Integrity

6 Hours

a. Learning through Biographies

- What makes an individual great?
- Understanding the persona of a leader for deriving holistic inspiration
- Drawing insights for leadership
- How leaders sail through difficult situations?

b. Ethics and Conduct

- Importance of ethics
- Ethical decision making
- Personal and professional moral codes of conduct
- Creating a harmonious life

Pedagogy : Pedagogy for the modules is as follows:

1. Leadership Skills - Lectures (augmented with videos); role-plays for leadership models; team building games

2. Managerial Skills - Lectures (augmented with videos), case studies (AMUL, TESLA, Toyota, DMRC, Tata Group, Google, The Mumbai Dabbawala), SWOT analysis, Johari window

3. Entrepreneurial Skills - Lectures (augmented with videos), case studies and practicing business plans

4. Innovative Leadership and Design Thinking - Concept discussion through lecture and videos followed by role-plays and exercises for each set of intelligence, activities using 5 steps – discovery, interpretation, ideation, experimentation, and evolution (Ref. Workbook of Design Thinking by IDEO)

5. Ethics and Integrity- Experiential learning through stories suggested list (Ahilya Bai, Holkar, Abdul Kalam, Raja Harishchandra, Mahatma Gandhi, Abraham Lincoln), audio visual augmented role plays and storytelling (leaders from varied fields like academics, corporate, social, sports, art, etc.)

Assessment : It can be combination of written evaluation and presentations, including simulations, case studies and business plan.

Bibliography and Suggested Readings :

Books

- Ashokan, M. S. (2015). *Karmayogi: A Bbiography of E. Sreedharan.* Penguin, UK.
- Brown, T. (2012). *Change by Design.* Harper Business
- Elkington, J., & Hartigan, P. (2008). *The Power of Unreasonable People: How Social Entrepreneurs Create Markets that Change the World.* Harvard Business Press.
- Goleman D. (1995). *Emotional Intelligence.* Bloomsbury Publishing India Private Limited
- Kalam A. A. (2003). *Ignited Minds: Unleashing the Power within India.* Penguin Books India
- Kelly T., Kelly D. (2014). *Creative Confidence: Unleashing the Creative Potential Within Us All.* William Collins
- Kurien V., & Salve G. (2012). *I Too Had a Dream.* Roli Books Private Limited
- Livermore D. A. (2010). *Leading with cultural intelligence: The New Secret to Success.* New York: American Management Association
- McCormack M. H. (1986). *What They Don't Teach You at Harvard Business School: Notes From A Street-Smart Executive.* RHUS
- O'Toole J. (2019) *The Enlightened Capitalists: Cautionary Tales of Business Pioneers Who Tried to Do Well by Doing Good.* Harpercollins
- Sinek S. (2009). *Start with Why: How Great Leaders Inspire Everyone to Take Action.* Penguin
- Sternberg R. J., Sternberg R. J., & Baltes P. B. (Eds.). (2004). *International Handbook of Intelligence.* Cambridge University Press.

E-Resources

- Fries, K. (2019). 8 Essential Qualities That Define Great Leadership. *Forbes.* Retrieved 2019-02-15 from https://www.forbes.com/sites/kimberlyfries/2018/02/08/8-essential-qualities-that-define-great-leadership/#452ecc963b63.
- How to Build Your Creative Confidence, Ted Talk by David Kelly - https://www.ted.com/talks/david_kelley_how_to_build_your_creative_confidence
- India's Hidden Hot Beds of Invention Ted Talk by Anil Gupta - https://www.ted.com/talks/anil_gupta_india_s_hidden_hotbeds_of_invention
- Knowledge@Wharton Interviews Former Indian President APJ Abdul Kalam - "A Leader Should Know How to Manage Failure" https://www.youtube.com/watch?v=laGZaS4sdeU
- Martin, R. (2007). How Successful Leaders Think. *Harvard Business Review,* 85(6) 60.
- NPTEL Course on Leadership https://nptel.ac.in/courses/122105021/9

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B.Sc. II Year Semester – IV

SEC-III

Universal Human Values

BS401B

Context with Justification :

Human civilisation is known for the values that it cherishes and practices. Across various times and places, sages, saints and seers, drawing on their experience, developed practices that placed central importance on values, though the names used by them differed, as their languages varied but the spirit was same. Universal human values are values that human beings cherish and hold in common consciously and otherwise in most of the places and times and practice them.

Renunciation is the foundational value. Renunciation or greedlessness has two preconditions: love for all living beings and absence of selfishness. Renunciation is not self-directed but other-directed and is for life in all forms and shapes, for welfare of all. Renunciation begins when selfishness ends. Renunciation to run away from the problems of life is cowardice. Renunciation without action means parasitic life. Also, service can be practised only when renunciation with action begins. Unegoistical service is inconceivable without renunciation; and true service is possible only through love and compassion. Life and death are eternal truths, so is the truth as fact and truth as value. Truth exists between the two ends of life and death and is to be pursued.

Truth, Love, Peace, Non-Violence and **Righteous Conduct** are the Universal Human Values. Renunciation (sacrifice), Compassion and Service are also commonly acceptable human values, which at the operation level have been named differently as sincerity, honesty, righteousness, humility, gratitude, aspiration, prosperity, non-violence, trust, faith, forgiveness, mercy, peace and so on. These are needed for well-being of an individual, society and humanity and ultimately Peace in the world.

This course aims at making learners conscious about universal human values in an integral manner, without ignoring other aspects that are needed for learner's personality development.

Objectives :

The present course deals with meaning, purpose, and relevance of universal human values and how to inculcate and practice them consciously to be a good human being and realise one's potentials.

Learning outcomes :

By the end of the course the learners will be able to:

1. Know about universal human values and understand the importance of values in individual, social circles, career path, and national life.
2. Learn from case studies of lives of great and successful people who followed and practised human values and achieved self-actualisation.
3. Become conscious practitioners of human values.
4. Realise their potential as human beings and conduct themselves properly in the ways of the world.

Credit: 02

Duration: 30 Hours

Number & Titles of Modules:

Module 1: Love & Compassion   5 Hours

Module 2: Truth   5 Hours

Module 3: Non-Violence	5 Hours
Module 4: Righteousness	5 Hours
Module 5: Peace	4 Hours
Module 6: Service	3 Hours
Module 7: Renunciation (Sacrifice)	3 Hours

Module Outline :

Module 1: Love & Compassion   5 Hours

- Introduction: What is love? Forms of love—for self, parents, family, friend, spouse, community, nation, humanity and other beings, both for living and non-living
- Love and compassion and inter-relatedness
- Love, compassion, empathy, sympathy and non-violence
- Individuals who are remembered in history for practicing compassion and love.
- Narratives and anecdotes from history, literature including local folklore
- Practicing love and compassion: What will learners learn gain if they practice love and compassion? What will learners lose if they don't practice love and compassion?
- Sharing learner's individual and/or group experience(s)
- Simulated Situations
- Case studies

Module 2: Truth   5 Hours

- Introduction: What is truth? Universal truth, truth as value, truth as fact (veracity, sincerity, honesty among others)
- Individuals who are remembered in history for practicing this value
- Narratives and anecdotes from history, literature including local folklore
- Practicing Truth: What will learners learn/gain if they practice truth? What will learners lose if they don't practice it?
- Learners' individual and/or group experience(s)
- Simulated situations
- Case studies

Module 3: Non-Violence   5 Hours

- Introduction: What is non-violence? Its need. Love, compassion, empathy sympathy for others as pre-requisites for non-violence
- Ahimsa as non-violence and non-killing
- Individuals and organisations that are known for their commitment to non-violence
- Narratives and anecdotes about non-violence from history, and literature including local folklore
- Practicing non-violence: What will learners learn/gain if they practice non-violence? What will learners lose if they don't practice it?
- Sharing learner's individual and/or group experience(s) about non-violence
- Simulated situations
- Case studies

Module 4: Righteousness

5 Hours

- Introduction: What is righteousness?
- Righteousness and *dharma*, Righteousness and Propriety
- Individuals who are remembered in history for practicing righteousness
- Narratives and anecdotes from history, literature including local folklore
- Practicing righteousness: What will learners learn/gain if they practice righteousness? What will learners lose if they don't practice it?
- Sharing learners' individual and/or group experience(s)
- Simulated situations
- Case studies

Module 5: Peace

4 hours

- Introduction: What is peace? Its need, relation with harmony and balance
- Individuals and organisations that are known for their commitment to peace
- Narratives and Anecdotes about peace from history, and literature including local folklore
- Practicing peace: What will learners learn/gain if they practice peace? What will learners lose if they don't practice it?
- Sharing learner's individual and/or group experience(s) about peace
- Simulated situations
- Case studies

Module 5: Service

3 Hours

- Introduction: What is service? Forms of service, for self, parents, family, friend, spouse, community, nation, humanity and other beings—living and non-living, persons in distress or disaster.
- Individuals who are remembered in history for practicing this value.
- Narratives and anecdotes dealing with instances of service from history, literature including local folklore
- Practicing service: What will learners learn/gain gain if they practice service? What will learners lose if they don't practice it?
- Sharing learners' individual and/or group experience(s) regarding service
- Simulated situations
- Case studies

Module 6: Renunciation (Sacrifice)

3 Hours

- Introduction: What is renunciation? Renunciation and sacrifice. Self-restrain and Ways of overcoming greed. Renunciation with action as true renunciation
- Individuals who are remembered in history for practicing this value.
- Narratives and anecdotes from history and literature, including local folklore about individuals who are remembered for their sacrifice and renunciation.
- Practicing renunciation and sacrifice: What will learners learn/gain if they practice Renunciation and sacrifice? What will learners lose if they don't practice it?
- Sharing learners' individual and/or group experience(s)
- Simulated situations
- Case studies

Module 4: Righteousness

5 Hours

- Introduction: What is righteousness?
- Righteousness and *dharma*, Righteousness and Propriety
- Individuals who are remembered in history for practicing righteousness
- Narratives and anecdotes from history, literature including local folklore
- Practicing righteousness: What will learners learn/gain if they practice righteousness? What will learners lose if they don't practice it?
- Sharing learners' individual and/or group experience(s)
- Simulated situations
- Case studies

Module 5: Peace

4 hours

- Introduction: What is peace? Its need, relation with harmony and balance
- Individuals and organisations that are known for their commitment to peace
- Narratives and Anecdotes about peace from history, and literature including local folklore
- Practicing peace: What will learners learn/gain if they practice peace? What will learners lose if they don't practice it?
- Sharing learner's individual and/or group experience(s) about peace
- Simulated situations
- Case studies

Module 5: Service

3 Hours

- Introduction: What is service? Forms of service, for self, parents, family, friend, spouse, community, nation, humanity and other beings—living and non-living, persons in distress or disaster.
- Individuals who are remembered in history for practicing this value.
- Narratives and anecdotes dealing with instances of service from history, literature including local folklore
- Practicing service: What will learners learn/gain gain if they practice service? What will learners lose if they don't practice it?
- Sharing learners' individual and/or group experience(s) regarding service
- Simulated situations
- Case studies

Module 6: Renunciation (Sacrifice)

3 Hours

- Introduction: What is renunciation? Renunciation and sacrifice. Self-restrain and Ways of overcoming greed. Renunciation with action as true renunciation
- Individuals who are remembered in history for practicing this value.
- Narratives and anecdotes from history and literature, including local folklore about individuals who are remembered for their sacrifice and renunciation.
- Practicing renunciation and sacrifice: What will learners learn/gain if they practice Renunciation and sacrifice? What will learners lose if they don't practice it?
- Sharing learners' individual and/or group experience(s)
- Simulated situations
- Case studies

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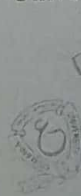
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B.Sc Mathematics- I - III Year
Semester – I - VI
Theory Model Question Paper

Time: $2\frac{1}{2}$hrs

Max. Marks: 70

SECTION A

I Write short notes on any Six of the following. **Each question carries 5 marks**   6 X 3 = 18 Marks

1. A question from unit I
2. A question from unit I
3. A question from unit II
4. A question from unit II
5. A question from unit III
6. A question from unit III
7. A question from unit IV
8. A question from unit IV

SECTION B

II Answer all the Questions. **Each question carries 13 marks**   4 X 13 = 52 Marks

9. (a) A question from Unit I
   (OR)
   (b) A question from Unit I

10. (a) A question from Unit II
    (OR)
    (b) A question from Unit II.

11. (a) A question from Unit III.
    (OR)
    (b) A question from Unit III.

12. (a)A question from Unit IV
    (OR)
    (b) A question from Unit IV.

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B.Sc Mathematics- I & II Year
Semester – I - IV
AECC / SEC Model Question Paper

Time: 1 ½ hrs

Max. Marks: 35

SECTION A

I Write short notes on any THREE of the following: Each question carries 5 marks   3 X 5 = 15 Marks

1. A question from unit I
2. A question from unit I
3. A question from unit II
4. A question from unit II

SECTION B

II Answer all the Questions. Each question carries 10 marks   2 X 10= 20 Marks

5. (a) A question from Unit I
          (OR)
   (b) A question from Unit I

6. (a) A question from Unit.II
          (OR)
   (b) A question from Unit II.

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(AUTONOMOUS)
B.Sc Mathematics- III Year
Semester – V & VI
GE & Mathematical Modelling Model Question Paper

Time: 2 ½ hrs   Max. Marks: 70

SECTION A

I. Write short notes on any Six of the following: 6 X 3 = 18 Marks

   1. A question from unit I
   2. A question from unit I
   3. A question from unit II
   4. A question from unit II
   5. A question from unit III
   6. A question from unit III
   7. A question from unit IV
   8. A question from unit IV

SECTION B

II Answer all the Questions. Each question carries 13 marks   4 X 13 = 52 Marks

9. (a) A question from Unit I
      (OR)
  (b) A question from Unit I

10. (a) A question from Unit II
      (OR)
  (b) A question from Unit II.

11. (a) A question from Unit III.
      (OR)
  (b) A question from Unit III.

12. (a)A question from Unit IV
      (OR)
  (b) A question from Unit IV.

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Time: 1 ½ hrs   Max. Marks: 35

SECTION A

I Write short notes on any THREE of the following: Each question carries 5 marks   3 X 5 = 15 Marks

1. A question from unit I
2. A question from unit I
3. A question from unit II
4. A question from unit II

SECTION B

II Answer all the Questions. Each question carries 10 marks   2 X 10= 20 Marks

5. (a) A question from Unit I
        (OR)
   (b) A question from Unit I

6. (a) A question from Unit II
        (OR)
   (b) A question from Unit II.

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HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
B.Sc. Mathematics- III Year
Semester – V & VI
GE & Mathematical Modelling Internal Model Question Paper

Time: ½ hrs

Marks: 20

Multiple Choice Questions

(20) MCQ 1 Marks Each

20 Marks

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OSMANIA UNIVERSITY
HYDERABAD-500 007. T.S.

(BOS, Dept of Maths , OU)

1.
2.

Chairperson
BoS in Mathematics
Department of Mathematics
Osmania University
Hyderabad-500 007.

PRINCIPAL
HINDI MAHA VIDYALAYA
(AUTONOMOUS)
Arts, Commerce & Science
Nallakunta, Hyderabad-44.

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
B.Sc. Mathematics- I - III Year
Semester – I - VI
Mathematics Theory Internal Model Question Paper

Time: ½ hrs   Marks: 20

Multiple Choice Questions ·

      (20) MCQ   1 Marks Each   20 Marks

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(BOS, Dept of Maths , OU)

T.S.Kamala   1.

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Arts, Commerce
Nallakunta,

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
B.Sc. Mathematics- I - II Year
Semester – I - IV
AECC / SEC   Internal Model Question Paper

Time: ½ hrs   Marks: 15

Multiple Choice Questions

(15) MCQ   1 Marks Each   15 Marks

Chairperson   University Nominee   Chairperson   Members   Principal

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HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
B.Sc Mathematics (Semester VI)
Project work Theory

4 Hours per week

Credits : 4

- The total allotted marks 100 are divided into the following way

➢ Internal Assessment (30 marks)

- First seminar (15 marks – in between 25 to 30 days after commencement of class work). This seminar include the study of existing system, literature survey, problem definition.
- Second seminar (15 marks – in between 55 to 60 days after commencement of class work). This seminar include the requirements specification, analysis, design and partial implementation.

➢ External Assessment (70 marks)

- The students should submit one page of synopsis on the project work for display on the notice board.
- The project presentation is for 10 minutes followed by 05 minutes for discussion.
- The student should submit a dissertation/technical write-up on the project. At least two teachers will be associated with the project seminar to evaluate students for the award of seasonal marks which will be on the basis of performance in all the 3 items (synopsis, presentation, dissertation/technical write-up).

Dissertation   : 40 Marks
Presentation   : 15 Marks
Viva   : 15 Marks

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HINDI MAHAVIDYALAYA
(AUTONOMOUS & NAAC RE-ACCREDITED)
DEPARTMENT OF MATHEMATICS
B.Sc. Mathematics
PANEL OF EXAMINERS

SEMESTER I & II

S.No.	Name of the Examiner	Institution Name	Contact No
1	Dr. V. Srinivas	Department of Mathematics, University College of Science, Saifabad O.U.	9440378294
2	Dr. K. Prudvi	Department of Mathematics, University College of Science, Saifabad	9947063988
3	Dr. V. Venkateshwarulu	Department of Mathematics, University College of Science, Saifabad	9949060102
4	Smt. L. Vishnupriya	Department of Mathematics, Government Degree College, Vidyanagar, Hyderabad	9948156176
5	Dr. Malleshwari	Department of Mathematics, Government Degree College, Vidyanagar, Hyderabad	
6	K.Aruna Jyothi	Department of Mathematics, AMS College, Hyderabad	9885738174
7	Dr. Srinivas Reddy	Department of Mathematics, Government City College, Nayaapul, Hyderabad	9676674009

Chairperson   University Nominee   Chairperson   Members   Principal

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Department of Mathematics
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DEPARTMENT OF MATHEMATICS
B.Sc. Mathematics
PANEL OF EXAMINERS

SEMESTER III & IV

S.No.	Name of the Examiner	Institution Name	Contact No
1	Dr. V. Srinivas	Department of Mathematics, University College of Science, Saifabad D·U .	9440378294
2	Dr. K. Prudvi	Department of Mathematics, University College of Science, Saifabad	9947063988
3	Dr.K.Sarada	Department of Mathematics, Government City College, Nayapul, Hyderabad	9440014536
4	Dr. Srinivas Reddy	Department of Mathematics, Government City College, Nayapul, Hyderabad	9676674009
5	Smt. L. Vishnupriya	Department of Mathematics, Government Degree College, Vidyanagar, Hyderabad	9948156176
6	K.Aruna Jyothi	Department of Mathematics, AMS College, Hyderabad	9885738174
7	P.Janshi Rani	Department of Mathematics, RBVRR College, Narayanaguda, Hyderabad	

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DEPARTMENT OF MATHEMATICS
B.Sc. Mathematics
PANEL OF EXAMINERS
SEMESTER V & VI

S.No.	Subject	Name of the Examiner	Institution Name	Contact No
1	A) BASIC MATHEMATICS (OR) B) MATHEMATICS FOR ECONOMICS & FINANCE	Dr. V. Padma Anuradha	Department of Mathematics, Government City College, Nayapul, Hyderabad	9346949962
		Vani Madhavi	Department of Mathematics, RBVRR College, Narayanaguda, Hyderabad	9490316896
		K. Aruna Jyothi	Department of Mathematics, AMS College, Hyderabad	9885738174
2	A) LINEAR ALGEBRA OR B) COMPLEX ANALYSIS	Dr. V. Srinivas	Department of Mathematics, University College of Science, Saifabad	9440378294
		Dr. V. Padma Anuradha	Department of Mathematics, Government City College, Nayapul, Hyderabad	9346949962
		Mr. Srinivas Reddy	Department of Mathematics, Government City College, Nayapul, Hyderabad	9676674009
		Smt. L. Vishnupriya	Department of Mathematics, Government Degree College, Vidyanagar, Hyderabad	9948156176
3	A) MATHEMATICAL MODELING (OR) B) MATHEMATICS PROJECT	Dr. V. Padma Anuradha	Department of Mathematics, Government City College, Nayapul, Hyderabad	9346949962
		K. Aruna Jyothi	Department of Mathematics, AMS College, Hyderabad	9885738174
		Smt. Saradha	Department of Mathematics, AMS College, Hyderabad	9490969677
4	A) NUMERICAL ANALYSIS OR B) INTEGRAL TRANSFORMS OR C) ANALYTICAL SOLID GEOMETRY	Mr. Srinivas Reddy	Department of Mathematics, Government City College, Nayapul, Hyderabad	9676674009
		K. Aruna Jyothi	Department of Mathematics, AMS College, Hyderabad	9885738174
		Dr. K. Sarada	Department of Mathematics, Government City College, Nayapul, Hyderabad	9440014536
		Smt. Saradha	Department of Mathematics, AMS College, Hyderabad	9490969677
		U. Sridevi	GDC Gajwel	9700603152
		Vani Madhavi	Department of Mathematics, RBVRR College, Narayanaguda, Hyderabad	9490316896

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