हिंदी भाषाकेव्याकरण के रचना पक्ष का गहन अध्ययन कौशल, व्यावसायिकउद्देश्य एवं तकनीकी दक्षता की दृष्टि तथा नई शिक्षा नीति के उद्देश्य को ध्यान में रखकर पाठ्यक्रम का निर्माण किया गया है।

बी.ए./ बी.एस-सी./ बी.कॉम./ बी.एच.एस.सी. भाग दो

(आधार पाठ्यक्रम)

प्रथम प्रश्नपत्र

हिंदी भाषा

कोड....

पूर्णांक 75

इंटर्नल 25

पाठ्यक्रम का उद्देश्य:-

(1)शब्द की विधाओं से अवगत कराना एवं निबंध कौशल सिखाना।

(2)कार्यालयीन हिंदी का ज्ञान प्रदान करना ।

(3)हिंदी व्याकरण का समग्र ज्ञान प्रदान करना ।

(4)हिंदी भाषा में प्रचलित विभिन्न शब्द रूपों से परिचित कराना।

पाठ्य विषय:-

इकाई 1 (क) नाखून क्यों बढ़ते हैं?: हजारी प्रसाद द्विवेदी (ख) कार्यालयीन भाषा, मीडिया की भाषा, वित्त एवं वाणिज्य की भाषा,मशीनी भाषा	अंक 15 15 कालखंड
इकाई 2 (क)युवकों का समाज में स्थान : आचार्य नरेंद्र देव (ख) हिंदी के तत्सम, तद्भव, देशज, विदेशी शब्द परिचय	अंक 15 15 कालखंड

संज्ञा, सर्वनाम,	
इकाई 3 (क)डॉ खूबचंद बघेल : हरि ठाकुर (ख)कारक, विशेषण, क्रिया विशेषण	अंक 15 15 घण्टे
इकाई 4 (क) एक पहाड़ीमैना की मौत : डॉ. कांति कुमार जैन (ख) समास, संधि	अंक 15 15 घण्टे
इकाई 5 (क) मातृभूमि : वासुदेव शरण अग्रवाल (ख)अनुवाद - परिभाषा स्वरूप, प्रकार, दोहन भाषा और सहज भाव अंग्रेजी से हिंदी में अनुवाद	अंक 15 15 घण्टे

मूल्यांकन योजना:-

प्रत्येक इकाई से एक-एक प्रश्न पूछे जायेंगे। प्रत्येक प्रश्न में आंतरिक विकल्प होगा। प्रत्येक प्रश्न के 15 अंक होंगे। प्रत्येक प्रश्न के दो भाग क और ख होंगे एवं अंक क्रमशः 08 एवं 07 होंगे। प्रश्नपत्र का पूर्णांक 75 निर्धारित

है।प्रश्नपत्रकेपूर्णांककाद्वसप्रतिशतअंकआंतरिकमूल्यांकनकेलिएनिर्धारितहै।

पाठ्यक्रम अधिगम परिणाम:-

1. गद्य की विभिन्न विधाओं से परिचित हो सकेंगे एवंउनमेंसाहित्यिक रुझान पैदा होगा।
2. हिंदी के आधारभूत व्याकरणिक अवधारणाओं से विद्यार्थी परिचित हो सकेंगे। उनमें रचनात्मकताएवं भाषाकौशल का विकास होगा।
3. विभिन्नप्रतियोगी परीक्षाओं की तैयारी में यह पाठ्यक्रम सहायक होगा।

पाठ्यक्रम निर्माण का औचित्य :-

सुप्रसिद्ध विद्वानों के लेख/निबंध/संस्मरण के माध्यम से विद्यार्थियों के चिंतनपरक दृष्टिकोण एवं व्यक्तित्व का विकास करते हुए उन्हें व्याकरणिक एवं भाषा-प्रयोग विषयक पक्ष से परिचित कराते हुए प्रतियोगी परीक्षाओं की दृष्टि से तैयार करने की दिशा में यह पाठ्यक्रम उपयोगी रहेगा।

23/12/23

Meeting -II

Today on 27th May 2022, a meeting of central Board of studies for Foundation course E Language was held for the formulation of Syllabus at School of Studies Literature and Languages, Pt. RSU, Raipur from 11am onwards.

Minutes of the Meeting -

1) The meeting was presided by Prof. G. A. Ghanshyam, o.S.D. Higher Education,Go C.G., who alongwith The Chairperson and other members of Central Board of Stud Foundation Course English Language finalised the Textbooks to be implemented f undergraduation classes from the new academic session.
2) The Memebers chalked down the Programme outcomes, Learning outcomes, and programme Specific Outcomes for the UG classes for English Language.
3) Marks distribution was done as per credit system.

Hence the final syllabus was laid down after discussion by all the members & Chairperson for foundation course English Language.

Following members were present in the meeting:

Prof. P C Choudhury chairman central Board of studies in English Literature.
Dr. G.A Ghanshyam. O.S.D. Higher Education. Nava Raipur.
Dr. Qamar Talat HoD English, Govt V. Y.T. PG Autonomous college Durg.
Dr. shukla Banerjee. HoD English Govt. N .P. G . college of Science , Raipur.
Dr. Merily Roy, HoD English, rndira Govt P.G. college, vaishali Nagar,Durg.
Dr. shrabani chakravorty Subject Expert Govt. Bilasa Girls pG college.
Dr. Rakesh Tiwari, HOD, K.M.T. Govt Girls College, Raigarh.
Prof SunilSahu,HoD,Govtl.K.GirlsCollege,Kanker
Dr. sushama Mishra, HoD, Govt. pt. shyamacharan shukra college, Dharsiwa

2/6/22
P C Choudhury

Central Board of Studies Foundation Course Paper-II
English Language for Under Graduate Students

Programme Outcomes for English Language B.A/B.Sc/B.Com I, II, III

The programme enables a student to get acquainted

- With the rich cultural heritage and develops patriotic feelings through works of Indian authors & poets.
- To get exposure of the usage of grammar according to contemporary
- To have an exposure about the literary genre with the help of the author poets across the globe.
- To develop an appreciation for English Language & Communication Skills

Learning Outcomes (English Language) B.A/B.Sc/B.Com - I, II, III

The learning outcomes are as follows:

1. To strengthen the linguistic skills -Listening, Speaking, Reading and Writing.
2. To refine the way of thinking and speaking which would lead them to have mighty ideas in day to day life.
3. To improve students speaking ability in English both in terms of fluency and comprehensibility.
4. To enhance practical use of English in day-to-day life.
5. To enrich the vocabulary of the students.

Dr. Sushama Mishra
12.6.2023

2/6/23

BA/B.Sc./B.Com/B.Sc. Home.Sc. (Part-II)

Foundation Course Paper-II English Language

Max. Marks 75 | Qualifying Marks 25

Total credits: 05

Paper-II	Mark's	Period's	Credit
Unit-I English in Use: A Textbook for College Students (Semester III), Macmillan Publishers India Pvt Ltd	3x5=15	18	01
Unit-II Business Reports & Media Reports Writing Notices, Blog Writing	1x10=10	18	01
Unit-III Reading Comprehension: (a) Unseen Passage (MCQ -based) (b) Vocabulary (Text-based)	1x5=05 1x10=10	18	01
Unit-IV Essay Writing: Discursive Essay, Argumentative Essay	1x10=10	09	0.5
Unit-V Grammar : • Ordering of words • Voice • Conditional sentences • Use of some, any, enough, too,otherwise, few, many, such, very • Prepositions • Question tags • Transformation of sentences(like-Simple to Compound to Complex,Exclamatory to Assertive) • Transformation of sententes with positive, Comparative and superlative degrees • Grammatical items given in the textbook'English in Use'	1x25=25	27	1.5
Total	75	90	05
Recommended Books- 1. Essential English Grammar, 2nd Edition by Raymond Murphy, Cambridge Publication 2. English Grammar in use 5th edition by Raymond Murphy, Cambridge Publication. 3. Advanced English Grammar by Martin Hewings Cambridge University Press.			

(Dr. Subhash Parihar)

2/6/23

Scheme of B. Sc. Physics

Year	Course Code	Subject Name	Theory/ Practical	Total Credit	Total Marks	
					Max	Min
First year	PHY-1T	Mechanics	Theory	4	50	17
	PHY-2T	Electricity and Magnetism	Theory	4	50	17
	PHY-1P	LAB 1: Mechanics, Electricity and Magnetism	Practical	2	50	17
Second year	PHY-3T	Thermal Physics and Statistical Mechanics	Theory	4	50	17
	PHY-4T	Waves and Optics	Theory	4	50	17
	PHY-2P	LAB 2: Thermal Physics, Statistical Mechanics, Waves and Optics	Practical	2	50	17
Third year	PHY-5T	Digital and Analog Circuits and Instruments	Theory	4	50	17
	PHY-6T	Elements of Modern Physics	Theory	4	50	17
	PHY-3P	LAB 3: Digital and Analog Circuits and Instruments, Modern Physics	Practical	2	50	17
			—	4	50	17

Note: There shall be four extra credits in all the years of under graduation for internship/apprenticeship. The certificate of extra credits would be provided by the university concern.

Diploma	Class: B.Sc.	Year: Second	Session: 2022-2023

1	Course Code	PHY – 3T
2	Course Title	THERMAL PHYSICS AND STATISTICAL MECHANICS
3	Course Type	Theory
4	Pre-requisite (if any)	No
5	Course Learning Outcomes (CLO)	**After completion of the course students will be able to :** • Understand the relations between heat, work, temperature, and energy. • Understand how the thermal energy in a system change and perform useful work on its surroundings. • Understand the interrelationship between thermodynamic functions and ability to use such relationships to solve practical problems. • Get the understanding about black body radiation. • Get the introductory knowledge of statistical mechanics. • Solve numerical problems based on entire syllabus
6	**Credit Value**	4
7	**Total Marks**	**Max. Marks: 50** / **Min Passing Marks: 17**

Part B: Content of the Course

Total number of Periods: 60

Unit	Topic	Number of Periods
I	**Laws of Thermodynamics:** **Thermodynamic Description of system:** Zeroth Law of thermodynamics and temperature. First law and internal energy, conversion of heat into work, various Thermodynamical Processes, Work Done during Isothermal and Adiabatic Processes, Reversible & irreversible processes. Second law of thermodynamics & Entropy, Carnot's cycle, Carnot's theorem, Entropy changes in reversible & irreversible processes, Entropy-temperature diagrams, Third law of thermodynamics.	12
II	**Thermodynamic Potentials:** Internal Energy, Enthalpy, Helmholtz Free Energy and Gibbs function. Maxwell's relations & applications, Clausius- Clapeyron Equation, Expression for $(C_P - C_V)$, C_P/C_V, TdS equations, Thermodynamic energy equation- change in internal energy of an ideal and Vander Waal's gas, Joule-Thompson Effect, Cooling by adiabatic demagnetization	12
III	**Kinetic Theory of Gases:** Maxwellian distribution of speeds in an ideal gas; distribution of speeds and velocities, experimental verification, distinction between mean, rms and most probable speed values, Molecular Collision and Mean Free Path .Transport Phenomena in gases: Viscosity, Conduction and Diffusion, Law of equipartition of energy.	12
IV	**Theory of Radiation:** Blackbody radiation, Spectral distribution, Concept of Energy Density, Stefan Boltzmann Law, Newton's law of cooling from Stefan Boltzmann's law, Wien's displacement law and Rayleigh-Jeans Law (Only qualitative).Planck's radiation Law, Deduction of Wien's distribution law and Rayleigh- Jeans Law from Planck's law, Experimental verification	12

-	of Planck's radiation law.	
V	**Statistical Mechanics:** Introductory Idea, Phase space, Macro-state and Microstate, Entropy andThermodynamic probability, fundamental postulates of statistical mechanics. Boltzmann's Canonical Distribution Law. Maxwell-Boltzmann distribution law, Quantum statistics - Fermi-Dirac distribution law and its application for Fermi Levels and Fermi Energy, Bose-Einstein distribution law and its application for Liquid Helium, comparison of three statistics.	12

Part C - Learning Resource

Text Books, Reference Books, Other Resources

Reference Books:

1. Heat and Thermodynamics, M.W.Zemansky and R. Dittman, 1981, McGraw Hill
2. Heat and Thermodynamics, Enrico Fermi, 1956, Courier Dover Publications.
3. Heat and Thermodynamics; Singhal, Agrawal and Satya Prakash, Pragati Prakashan 1984
4. A Treatise on Heat, Meghnad Saha, and B.N. Srivastava, 1969, Indian Press.
5. Physics (Part-2): Editor, Prof. B.P.Chandra, M.P. Hindi Granth Academy
6. Thermodynamics, Kinetic theory & Statistical thermodynamics, F.W.Sears & G.L.Salinger. 1988, Narosa
7. Introduction to Statistical Mechanics: B.B.laud, New age International Publications Second Edition
8. Statistical Mechanics : R.K. Pathria and Paul D.Beale, ELSEVIER ,Fourth Edition.

Link for e-resources:

1. Basics of thermodynamics ***https://www.youtube.com/watch?v=9GMBeZZtiXM&list=PLD8E646BAB3306BC8***
2. Thermodynamics ***https://www.youtube.com/watch?v=E9cOAMhFUz0***
3. Second law of thermodynamics ***https://www.youtube.com/watch?v=F_flGexPY8o***
4. Introduction of statistical mechanics ***https://www.youtube.com/watch?v=N7vkXuyw1D0&list=PLZbqNdSTvWDYQZXp9DN9mGP1sNAjPNGqQ***
5. Basic of statistical mechnics ***https://www.youtube.com/watch?v=M4mvGS30b-s&list=PLuBp17LKkMfGelbgdfetzMTR2I4hdQv-r***
6. Classical Statistical Mechanics https://youtu.be/XIXQ38JnF0k
7. Bose-Einstein Statistics https://youtu.be/1aHFG7YLs-g

Part D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 50

Continuous Comprehensive Evaluation (CCE): As per University Guideline

University Exam (UE): 50 Marks

Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Class Test/Assignment/Presentation	As per University Guideline

Part A: Introduction

Programme: Practical Course	Class: B.Sc.	Year: Second	Session: 2022-2023
1	Course Code	PHY – 2P	
2	Course Title	LAB 2: Thermal Physics, Statistical Mechanics, Waves and Optics	
3	Course Type	Practical	
4	Pre-requisite (if any)	No	
5	Course Learning Outcomes (CLO)	**Expected Outcomes: -** • Students able to get working knowledge of laws and methods of thermodynamics and elementary statistical mechanics and to use this knowledge students can explore various application related to physics of condensed matter. • Students experience experimental evidence of laws of wave optics and how light has wave nature is confirmed through experiment.	
6	**Credit Value**	2	
7	**Total Marks**	**Max. Marks: 50**	**Min Passing Marks : 17**

Part B: Content of the Course

Total Lectures: 30

Tentative Practical List

Any 14 practical from the following

1. To determine the thermal conductivity of a non-conducting material by Lee's disc method.
2. To determine the specific rotation of sugar solution with the help of polarimeter.
3. To verify Newton's law of cooling.
4. To study binomial distribution law of probability using 4 coins.
5. To determin e the frequency of electric generator by Melde's experiment.
6. To determine the coefficient of thermal conductivity(k) by rubber tubing method.
7. To study the heat efficiency of an electric kettle with varying voltage.
8. To determine the frequency of A.C. mains using sonometer.
9. To determine the ratio of specific heat at constant pressure and constant volume ($\gamma=C_p/C_v$) of air Clement and Desorme's method.
10. To study the variation of thermos-Emf of thermos couple with Difference of Temperature of its Two Junctions.
11. To determine the refractive index of the material of the prism with the help of spectrometer.
12. To determine the radius of curvature of a plano-convex lens by Newton's circular ring method.
13. To find out wavelength of monochromatic light source with the help of Newton's Ring.
14. To determine the wavelength of laser light by diffraction grating.
15. To determine the resolving power of a telescope.
16. To determine the resolving power of a plane diffraction grating.
17. To determine the wavelength of monochromatic light source by

	single slit diffraction. 18. To determine the dispersive power of the prism with the help of spectrometer. 19. To determine the refractive index of ordinary and extra-ordinary rays for the calcite prism using spectrometer. 20. To determine the refractive index of water using laser light and photocell.

Part C - Learning Resource

Text Books, Reference Books, Other Resources

Reference Books:

1. Advanced Practical Physics for students, B.L.Flint & H.T.Worsnop, 1971, AsiaPublishing House.
2. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
3. A Text Book of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition,2011, Kitab Mahal, New Delhi.
4. A Laboratory Manual of Physics for Undergraduate Classes, D.P. Khandelwal,1985, Vani Publication.

Part D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 50

Continuous Comprehensive Evaluation (CCE): As per University Guideline

University Exam(UE): 50 Marks

Internal Assessment: Continuous Comprehensive Evaluation(CCE)	Class Test/Assignment/Presentation	As per University Guideline

Part A: Introduction				
Program: Diploma Course		Class: B. A / B.Sc. Part II	Year: 2022	Session:2023-2024
1	Course Code	Paper – MATH-3T		
2	Course Title	Differential Equations		
3	Course Type	Theory		
4	Pre-requisite (if any)	No		
5	Course Learning Outcome (CLO)	**This Course will enable the students to:** • Understand the genesis of ordinary as well as partial differential equations. • Learn various techniques of getting exact solutions of certain solvable first order differential equations and linear differential equations of second order. • Know Picard's method of obtaining successive approximations of solutions of first order ordinary differential equations, passing through a given point in the plane. • Learn about solution of first order linear partial differential equations using Lagrange's method. • Know how to solve second order linear partial differential equations with constant coefficients. • Formulate mathematical models in the form of ordinary and partial differential equations to problems arising in physical, chemical and biological disciplines.		
6	Credit Value	4		
7	Total Marks	Maximum Marks : 50		Minimum Passing Marks :

Part B: Content of the Course Total Periods: 60		
Unit	Topics	No. of Periods
I	**First Order Differential Equations:** Basic concepts and genesis of ordinary differential equations, Order and degree of a differential equation, Differential equations of first order and first degree, Equations in which variables are separable, Homogeneous equations, Linear differential equations and equations reducible to linear form, Exact differential equations, Integrating factor, First order higher degree equations solvable for x, y and p, Clairaut's form and singular solutions; Picard's	12

	method of successive approximations and the statement of Picard's theorem for the existence and uniqueness of the solutions of the first order differential equations.	
II	**Second Order Linear Differential Equations:** Statement of existence and uniqueness theorem for the solution of linear differential equations, General theory of linear differential equations of second order with variable coefficients, Solutions of homogeneous linear ordinary differential equations of second order with constant coefficients, Method of variation of parameters and method of undetermined coefficients, Reduction of order, Euler-Cauchy equations, Coupled linear differential equations with constant coefficients.	12
III	**First Order Partial Differential Equations:** Genesis of Partial differential equations (PDE), Concept of linear and non-linear PDEs, Methods of solution of Simultaneous differential equations of the form: $dx/P(x,y,z) = dy/Q(x,y,z) = dz/R(x,y,z)$, Lagrange's method for PDEs of the form: $P(x,y,z)p+Q(x,y,z)q=R(x,y,z)$, where $p=\partial z/\partial x$ and $q=\partial z/\partial y$; Solutions passing through a given curve.	12
IV	**Second order Partial differential equations:** Principle of superposition for homogeneous linear PDEs, Relation between solution sets of non-homogeneous linear PDEs and their corresponding homogeneous equations, Reducible and irreducible homogeneous equations and their solutions in various possible cases, Solution of non-homogeneous reducible equations using Lagrange's method for first order equations.	12
V	**Applications:** Orthogonal trajectories of one-parameter families of curves in a plane, Minimum velocity of escape from Earth's gravitational field, Newton's law of cooling, Malthusian and logistic population models, Radioactive decay, Free and forced mechanical oscillations of a spring suspended vertically carrying a mass at its lowest tip, Phenomena of resonance, LCR circuits, Surfaces orthogonal to a given system of surfaces.	12

Part C - Learning Resources

Text Books and Reference Books:

1. Erwin Kreyszig . *Advanced Engineering Mathematics* (10th edition). J. Wiley &Sons 2011
2. B. Rai & D. P. Choudhury. *Ordinary Differential Equations - An Introduction*.Narosa Publishing House Pvt. Ltd. New Delhi. 2006
3. Shepley L. Ross. *Differential Equations* (3rd edition). Wiley. 2007
4. George F. Simmons. *Differential Equations with Applications and HistoricalNotes* (3rd edition). CRC Press. Taylor & Francis. 2017

5. Ian N. Sneddon. *Elements of Partial Differential Equations*. Dover Publications. 2006

E-Resources:

1. Suggested Equivalent **online courses:** Web link NPTEL/ SWAYAM/ MOOCs
2. Differential equation
   https://www.youtube.com/watch?v=NBcGLLU90fM&list=PLbMVogVj5nJSGlf9sIuocwobvr_z26gID
3. Partial Differential equation
   https://www.youtube.com/watch?v=Kk5SEzASkZU&list=PL9m2Lkh6odgKbfY03TFRhwjOqW79Ldzk8

Part D: Assessment and Evaluation	
Suggested Continuous Evaluation Methods:	
Maximum Marks:	50 Marks

Declaration

This is to certify that the syllabus is framed by the Central Board of Studies (Mathematics) as per the guidelines (TOR) of the Department of Higher Education, Raipur Chhattisgarh.

1. Dr. Premlata Verma - Chairman
   Asst. Prof.
   Govt. Bilasa Girls PG College, Bilaspur
2. Prof. R.R. Sahu - Member
   Asst. Prof.
   Govt. MMR PG College, Champa
3. Mr. Yetendra Upadhyay - Member
   Asst. Prof.
   Govt. N.K. College, Kota
4. Ram Lakhan Pandey - Mainber
   Asst. Prof.
   Dr. B.R. Ambedkar Govt. College, Baloda
5. Dr. Arun Kumar Mishra - Member
   Professor
   Govt. DT PG College, Utai
6. Dr. Shabnam Khan - Member
   Professor
   Govt. Digvijay PG College, Rajnandgaon
7. Dr. Padmavati - Member
   Professor
   Govt. VYT PG Auto. College, Durg

8. Dr. Anjali Chandravanshi - Member
Asst. Prof.
Govt. J.Y. Chhattisgarh College, Raipur

9. Manisha Gupta - Member
Asst. Prof.
GNA Govt. PG College, Bhatapara, Raipur

10. Mrs. Sangeeta Pandey - Member
Asst. Prof.
R.G. Govt. PG College, Ambikapur

11. Dr. S.K. Bohre - Member
Asst. Prof.
I.G. Govt. PG College, Vaishalinagar, Bhilai

12. Dr. Samir Dashputre - Member
Asst. Prof.
Govt. College, Arjunda, Balod

13. Dr. Chandrajeet Singh Rathore - Member
Asst. Prof.
Govt. Jajwalyadev Naveen Girls PG College, Janjgir

14. Dr. Shri Nath Gupta - Member
K. Govt. Arts & Science College, Raigarh

15. Dr. Raghu Nandan Patel - Member
Asst. Prof.
Govt. M.S College, Seepat

Part A: Introduction				
Program: Diploma Course		Class: B. A. / B.Sc. Part II	Year: 2022	Session:2023-2024
1	Course Code	Paper – MATH-4T		
2	Course Title	Real Analysis		
3	Course Type	Theory		
4	Pre-requisite (if any)	No		
5	Course Learning Outcome (CLO)	**This Course will enable the students to:** • Understand basic properties of real number system such as least upper bound propertyand order property. • Realize importance of bounded, convergent, Cauchy and monotonic sequences of real l numbers, find their limit superior and limit inferior. • Apply various tests to determine convergence and absolute convergence of a series of real numbers. • Learn about Riemann integrability of bounded functions and algebra of R- integrable functions. • Determine various applications of the fundamental theorem of integral calculus. • Relate concepts of uniform continuity, differentiation, integration and uniformconvergence.		
6	Credit Value	4		
7	Total Marks	Maximum Marks : 50		Minimum Passing Marks :

Part B: Content of the Course Total Periods: 60		
Unit	Topics	No. of Periods
I	**Real Numbers:** The set of real numbers $\mathbb{R}$ as an ordered field, Least upper bound properties of $\mathbb{R}$, Metric property and completeness of $\mathbb{R}$, Archimedean property of $\mathbb{R}$, Dense subsets of $\mathbb{R}$, Nested intervals property; Neighbourhood of a point in $\mathbb{R}$, Open sets, limit point of a set, closed and perfect sets in $\mathbb{R}$, connected and compact subsets of $\mathbb{R}$, Heine-Borel theorem.	12
II	**Convergence of Sequences in $\mathbb{R}$:** Bounded and monotonic sequences, Convergent sequence and its limit, Limit theorems, Monotone convergence	12

	theorem, Subsequences, Bolzano-Weierstrass theorem, Limit superior and limit inferior, Cauchy sequence, Cauchy's convergence criterion.	
III	**Infinite Series:** Convergence of a series of positive real numbers, Necessary condition for convergence, Cauchy criterion for convergence; Tests for convergence: Comparison test, Limit comparison test, D'Alembert's ratio test, Cauchy's n^{th} root test, Abel's test, Integral test; Alternating series, Absolute and conditional convergence, Leibniz theorem, Rearrangements of series, Riemann's rearrangement theorem.	12
IV	**Riemann Integration:** Riemann integrability of bounded functions, Examples of R-integrable and non-integrable functions, Algebra of Riemann integrable functions, Integrability of continuous and monotonic functions, Darboux theorems, Fundamental theorem of integral calculus, First mean value theorem and second mean value theorems (Bonnet and Weierstrass forms). Necessary and sufficient condition for Riemann integrable function (Statement only).	12
V	**Uniform Convergence, Continuity and Improper Integrals:** Pointwise and uniform convergence of sequence and series of functions, Uniform continuity, Weierstrass's M-test, Uniform convergence and continuity, Uniform convergence and differentiability, Improper integrals and tests for improper integrals, Beta and Gamma functions.	12

Part C - Learning Resource

Text Books, Reference Books:

1. T. M. Apostol. *Mathematical Analysis: A Modern Approach to AdvancedCalculus*. Pearson Education. 2008
2. Charalambos D. Aliprantis &) Owen Burkinshaw. *Principles of Real Analysis* (3rd edition). Academic Press. 1998
3. Robert G. Bartle & Donald R. Sherbert. *Introduction to Real Analysis* (4thedition).Wiley India. 2015
4. Gerald G. Bilodeau, Paul R. Thie & G. E. Keough. *An Introduction to Analysis* (2nd edition), Jones and Bartlett India Pvt. Ltd. 2015
5. E. Hewitt & K. Stromberg (2013). *Real and Abstract Analysis*. Springer-Verlag.
6. K. A. Ross. *Elementary Analysis: The Theory of Calculus* (2nd edition). Springer. 2013

7 Walter Rudin, *Principles of Mathematical Analysis* (3rd edition), Tata McGraw Hill.

E-Resources:

1. Suggested Equivalent online courses: Web link NPTEL/ SWAYAM/ MOOCs
2. https://www.youtube.com/watch?v=BefBOjIjCy0&list=PLbMVogVj5nJQ1UXrOm7KqTg9UKk6eXRp
3. https://www.youtube.com/watch?v=C2qIuHkhEuM&list=PLOzRYVm0a65cpVtcdi_5SBEb6VOvC_ByR

Part D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:
Maximum Marks: 50 Marks

Declaration

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Asst. Prof.
Govt. MLS College, Seepat

Part A: Introduction				
Program: **Diploma Course**		**Class: B.A/ B.Sc. II Year**	Year: **2022**	Session: **2023-2024**
1	Course Code	**MATH-2P (I)**		
2	Course Title	**I - Lab 02 - Differential Equations and Real Analysis**		
3	Course Type	**Practical**		
4	Pre-requisite (if any)	No		
5	Course Learning Outcomes (CLO)	**This course will enable the students to** • **Learn Free and Open Source Software (FOSS) tools for computer programming** • **Solve problem on differential equations and real analysis theory studied in Mathematics Paper 1 and 2 by using FOSS software's.** • **Acquire knowledge of applications of Differential Equations and Real Analysisthrough FOSS.**		
6	**Credit Value**	**2**		
7	**Total Marks**	**Max. Marks: 50**	**Min Passing Marks : 17**	

Part B: Content of the Course	
Total Periods: 30	
Tentative Practical List	Mathematics practical with Free and Open Source Software (FOSS) tools for computer programs, such as GeoGebra/Maxima/Scilab/ Octave /Python/R. **Course Objectives:** • **To learn Free and Open Source Software (FOSS) tool for computerprogramming** • **Acquire knowledge of applications of differential equations and real analysisthrough FOSS** **List of Practicals:** (At least 10 practicals) • **Solution of differential equation and plotting the graph of the solution:Variable separable.** • **Solution of differential equation and plotting the graph of the solutionHomogeneous equations.** • **Solution of differential equation and plotting the graph of the solution:Linear differential equations.**

	• Solution of differential equation and plotting the solution: Bernoulli'sequations • Solution of second and higher order ordinary differential equations withconstant coefficients • Solution of second order ordinary differential equations with variable coefficients by i) Method of variation of parameters ii) When the equationis exact. • Finding complementary function and particular integral of constantcoefficient second and higher order ordinary differential equations. • Solving second order linear partial differential equations in two variableswith constant coefficient. • Solutions to the problems on total and simultaneous differential equations. • Solutions to the problems on different types of Partial differentialequations. • Illustration of convergent, divergent and oscillatory sequences. • Using Cauchy's criterion to determine convergence of a sequence(simple examples). • Illustration of convergent, divergent and oscillatory series. • Programs to find the sum of the series and its radius of convergence. • Using Cauchy's criterion on the sequence of partial sums of the series todetermine convergence of series. • Testing the convergence of binomial, exponential and logarithmic seriesand finding the sum. • To verify the given function is Riemann integrable or not over arbitraryclosed interval [a, b].

Part C - Learning Resource		
Text Books, Reference Books, Other Resources		
SUPPORT FROM THE GOVT FOR STUDENTS AND TEACHERS IN UNDERSTANDING AND LEARNING FOSS TOOLS: As a national level initiative towards learning FOSS tools, IIT Bombay for MHRD, government of India is giving free training to teachers interested in learning open source software's like scilab, maxima, octave, geogebra and others. (Website: http://spoken-tutorial.org;) (email: info@spoken-tutorial.org; contact@spoken-tutorial.org)		
Part D: Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks: 50 Continuous Comprehensive Evaluation (CCE): Not Applicable University Exam(UE): 50 Marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Class Test/Assignment/Presentation	Not Applicable

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Part A: Introduction				
Program: **Diploma Course**		Class: **B.A./ B.Sc. II Year**	Year: **2022**	Session: **2023-2024**
1	Course Code	**MATH-2P (II)**		
2	Course Title	**II - Project 02 - History of Mathematician**		
3	Course Type	**Project**		
4	Pre-requisite (if any)	**No**		
5	Course Learning Outcomes (CLO)	Studying history of mathematicians help students: • Develop a deeper understanding of the mathematics they have already studied by seeing how it was developed over time and in various places. • Know the rich intellectual heritage of the country. • Develop an appreciation of mathematics and build positive attitude towards mathematics increasing student's motivation decreasing anxiety related the subject. • To acquire knowledge about development of mathematics in ancient , medieval and modern period of history.		
6	**Credit Value**	**2**		
7	**Total Marks**	**Max. Marks: 50**	**Min Passing Marks : 17**	

Part B: Content of the Course Total Periods: 30	
Project List	**Course Objectives:** An elective course designed to acquire special / advance knowledge, such as supplement study / support study to a project work and a candidate study such a course on his own with an advisory support by a teacher / faculty member. **Project** Contributions and biographies of Indian Mathematicians Aryabhatta , Varahmihir , and Bhaskar I ,Shreedharacharya , Shreepati and Parmeshwar and contribution involved in contents of the paper of Differential Equations and Real Analysis. (Any 10 Mathematicians)

Part C - Learning Resource		
Text Books, Reference Books, Other Resources		
Part D: Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks: 50 Continuous Comprehensive Evaluation (CCE): Not Applicable University Exam(UE): 50 Marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Class Test/Assignment/Presentation	Not Applicable

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Scheme of B.Sc. Computer Science

Year	Course Code	Subject Name	Theory/ Practical	Total Credit	Total Marks	
					Max	Min
First	COMP-1T	Computer Fundamental and Operating System	Theory	4	50	17
	COMP-2T	Programming with C and C++	Theory	4	50	17
	COMP-1P	LAB 1: Programming with C and C++	Practical	2	50	17
Second	COMP-3T	Data Structure	Theory	4	50	17
	COMP-4T	Web technology and Java	Theory	4	50	17
	COMP-2P	LAB 2: Web technology and Java	Practical	2	50	17
Third	COMP-5T	Data Communication and Networking	Theory	4	50	17
	COMP-6T	Relational Database Management System	Theory	4	50	17
	COMP-3P	LAB 3: Relational Database Management System	Practical	2	50	17
Total				30	450	

Note: There shall be four extra credits in all the years of under graduation for internship/apprenticeship. The certificate of extra credits would be provided by the concern university and is not mandatory.

Part A: Introduction				
Program: **Diploma Course**		Class: **B.Sc.-CS II Year**	Year: **2022**	Session:**2022-2023**
1.	Course Code	**COMP-3T**		
2.	Course Title	**Data Structure**		
3.	Course Type	**Theory**		
4.	Pre-requisite (if any)	No		
5.	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to: • Use different types of data structures, operations and algorithms. • Implement appropriate sorting/searching technique for any given problem. • Use stack, Queue, Lists, Trees and Graphs in problem solving. • Find suitable data structure during application development/ Problem Solving.		
6.	**Credit Value**	**Theory: 4**		
7.	**Total Marks**	**Max Marks: 50**	**Min Passing Marks: 17**	

Part B: Content of the Course		
Total Periods: 60		
Unit	**Topics**	**No. of Periods**
I	**Introduction and Basic Concepts of Data Structure:** Data types: primitive, non-primitive data types, ADT, Linear and nonlinear data structure. **Linear Data Structures:** Arrays: One dimensional, Multidimensional array, allocation methods, address calculations, sparse arrays. Linked List: Singly and Doubly Linear link lists, singly and doubly circular linked list: Definitions, operations (INSERT, DELETE, TRAVERSE) on these lists. (Insertion operation includes – insertion before a given element, insertion after a given element, insertion at given position, insertion in sorted linked list)	12
II	**Stack:** Stack: Definition, Operations PUSH, POP, TRAVERSE, implementations using array and linked list, Applications of stack: Infix, Prefix, Postfix representation and conversion using stack, Postfix expression evaluation using stack. **Queue:** Introduction, and Types of Queues: Priority Queue, Circular queue, Double Ended Queue, operations (INSERT, DELETE, TRAVERSE), implementation using array and linked list and applications	12
III	**Non-linear Data Structure:** Trees: Definition of trees and their types, Binary trees, Properties of Binary trees and Implementation operation (Insertion, deletion, searching and traversal algorithm: preorder, post order, in-order traversal), Binary Search Trees, Implementations, Threaded trees, AVL Trees.	12
IV	**Graph:** Definition of Graph and their types, adjacency and incident (matrix & linked list) representation of graphs, Graph Traversal – Breadth first Traversal, Depth first Traversal, Connectivity of graphs; Weighted Graphs, Shortest path Algorithm, spanning tree, Minimum Spanning tree, Kruskal's and prim's algorithms. Static Hashing: Introduction, Hash table, Hash function.	12

V.	**Sorting Methods:** Types of sorting, Sequential Sort, Insertion Sort, Bubble Sort, Quick Sort, Merge Sort. **Searching:** Linear search, Binary search, Hashing, collision resolution methods, Comparison of Search trees.	12
Keywords: Linear Data Structure, Non-linear Data Structure, Searching, Sorting, Graph.		

Part C - Learning Resources

Text Books, Reference Books, Other Resources

Suggested Readings:

1. "Data Structures and Algorithms in C++", Michael T. Goodrich, Wiley, 2007
2. "Fundamentals of Data Structures", Horowitz and Sahani, Computer Science Press, 1978
3. "Data structures and Algorithms", Aefred V. Aho, Jhon E. Joperoft and J.E. Ullman.
4. "An Introduction to Data Structures with Applications", Jean Paul Trembley and Paul Sorenson, TMH, International Student Edition, 1985
5. "Data Structures and Program Design in C", R. Kurse, Leung &Tondo, 2nd Edition, PHI publication

E- Resources:

1. Introduction to Data Structure
   https://www.youtube.com/watch?v=zWg7U0OEAoE&list=PLBF3763AF2E1C572F&index=1
2. Stacks
   https://www.youtube.com/watch?v=g1USSZVWDsY&list=PLBF3763AF2E1C572F&index=2
3. Queues and linked list
   https://www.youtube.com/watch?v=PGWZUgzDMY1&list=PLBF3763AF2E1C572F&index=3
4. Trees
   https://www.youtube.com/watch?v=4ORLeHHuzM&list=PLBF3763AF2E1C572F&index=6
5. Graphs
   https://www.youtube.com/watch?v=9zpSs845wf8&list=PLBF3763AF2E1C572F&index=24

Part D: Assessment and Evaluation

Maximum Marks: 50

Declaration

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   Prof. and Head, Dept. of Computer Science and Application
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Devi Ahila Vishwavidyalaya, Indore

Date: 03.06.2022

Part A: Introduction				
Program: **Diploma Course**		Class: **B.Sc.-CS II Year**	Year: **2022**	Session: **2022-2023**
1.	Course Code	**COMP-4T**		
2.	Course Title	**Web Technology and Java**		
3.	Course Type	**Theory**		
4.	Pre-requisite (if any)	Basic understanding of programming concepts and programming language		
5.	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to: • Create applications using HTML, CSS and Java Script. • Understand fundamental tools and technologies for web design. • Specify design rules in constructing web pages and sites. • Understand how web pages are designed and created. • Design console-based GUI based and web based application. • Front end designing using html, CSS, java script and bootstrap. • Develop server-side programs in the form of Servlet. • Designing web application by using JSP as a server-side programming. • Design and implement dynamic websites with good aesthetic sense of designing and latest technical know-how's Create web pages using HTML and Cascading Styles sheets. • Analyze a web page and identify its elements and attributes Create dynamic web pages using JavaScript. • Build web applications using JSP and Servlet.		
6.	**Credit Value**	**Theory: 4**		
7.	**Total Marks**	**Max. Marks: 50**	**Min Passing Marks : 17**	

Part B: Content of the Course		
Total Periods: 60		
Unit	**Topics**	**No. of Periods**
I	**Introduction:** Overview of WWW, Web page, Web browsers, HTTP, URL, Hypertext, Web server, Tools for web site development, hosting options and domain name registration. **Markup language:** Introduction, DTD, Creating Web pages, Headings, Paragraphs, Lists, Hyperlinks, Tables, Web forms, Input Types, Input Attributes, Inserting images, Frames, Basics of DHTML, XML , XHTML.	12

II.	**Web Development:** CSS- Introduction, Syntax, measurement units, colors, Backgrounds, Font, Text, position, Align, Images, Link, Table, List, Padding. **JavaScript:** Overview, syntax, Variables, Operators, Decision control statement, Looping statement, JavaScript functions, Java script Events, Cookies, Page Redirect, and Validation. **Bootstrap:** Introduction, Grid system, typography, tables, images, dropdowns, jumbotron, them, template and forms. **PHP:** Introduction, syntax, variables, operators, functions, include, get method, post method, cookies, session, PHP form validation, exception.	12
III.	**JAVA:** Primitive Data Types, Variables, Array, operators, control statements, classes and objects, Abstract Classes, Polymorphism, Inheritance, Method Over-writing, method overriding, constructor, super keyword, this keyword, final static, package and interface, Multi-threading and Exception Handling, Collection Framework. Introduction to applet.	12
IV.	**Java Server Page (JSP):** Basics of Servlet, writing simple program in Servlet, Introduction to Java Server Page (JSP), Embedding Java Code into HTML, Implicit JSP Objects, Overview of the JSP Tags, Directives, Declarations, Expressions, Deploying Servlet and JSP, JSTL, JSP Action elements: jsp:forward, jsp:include, JSP Request, JSP Response, JSP Config, JSP Session, Cookies, JSP Exception Handling.	12
V.	**Database Using JDBC:** Concept, JDBC Driver Types, JDBC package, establishing a database connection and executing SQL Statements.	12
Keywords: Web Designing, Collection Framework, Servlet, JSP, Database Connectivity.		

Part C: Learning Resources

Text Books, Reference Books, Other Resources

Suggested Readings:

1. The Complete Reference JAVA, Herbert Schelds, Tata McGraw Hill publication, 5th Edition.
2. Advance JAVA, Gajendra Gupta, Firewall Media, 1st Edition, 2006.
3. JAVA network programming, Elliotte Rusty Harold, O'Reilly Publication, 3rd Edition.
4. Core Java for Beginners, Rashmi Kanta Das, Vikas Publishing House Pvt. Ltd.
5. Internet and Internet Engineering, Daniel Minoli, TMH (Latest Edition)
6. Java Script, Gosslin, Vikas (Latest Edition)
7. HTML The Definite Guide, Chuck musiano& Bill Kenndy, O Reilly (Latest Edition).

E Resources:

1. Introduction to web-app
   https://www.youtube.com/watch?v=lZnp3tRRTzw&list=PLJ5C_6qdAvBEJ6-TBzKoa1Ov21lwDzJfM&index=22
2. Building web-app
   https://www.youtube.com/watch?v=kdEn4LoAQIE&list=PLJ5C_6qdAvBEJ6-TBzKoa1Ov21lwDzJfM&index=3
3. Introduction to Java Script
   https://www.youtube.com/watch?v=fRhP92oScp0&list=PLJ5C_6qdAvBEJ6-TBzKoa1Ov21lwDzJfM&index=10
4. Introduction to Database
   https://www.youtube.com/watch?v=mtc0HHirUKpI&list=PLJ5C_6qdAvBEJ6-TBzKoa1Ov21lwDzJfM&index=12
5. Introduction to SQL
   https://www.youtube.com/watch?v=ar2maKv0nPw&list=PLJ5C_6qdAvBEJ6-TBzKoa1Ov21lwDzJfM&index=16
6. Introduction to Java
   https://www.youtube.com/watch?v=OjdT2l-EZJA&list=PLfn3cNtmZdPOe3R_wO_h540QNfMkCQ0ho&index=1

Part D: Assessment and Evaluation

Maximum Marks: 50

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13. Dr. Ugrasen Suman - Member
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    Devi Ahila Vishwavidyalaya, Indore

Date: 03-06-2022

Part A: Introduction			
Program: Diploma Course	Class: B.Sc. CS II Year	Year: 2022	Session: 2022-2023
1 Course Code	COMP-2P		
2 Course Title	LAB 2: Web Technology and JAVA		
3 Course Type	Practical		
4 Pre-requisite (if any)	Theoretical knowledge of HTML, CSS, JavaScript and JAVA		
5 Course Learning Outcomes (CLO)	At the end of course, Students will be able to: • Develop web-based application. • Develop front end application using front end technologies. • Demonstrate the principles of object-oriented programming. • Create multi-threaded programs and event handling mechanisms • Develop simple GUI interfaces for a computer program to interact with users. • Use form validation on web page. • Develop server-based application using Servlet and JSP.		
6 Credit Value	Practical: 2		
7 Total Marks	Max. Marks: 50		Min Passing Marks : 17

Part B: Content of the Course	
	Total Lecture: 30
Tentative Practical List	Note: This is tentative list; the teachers concern can add more program as per requirement. Developing Web based application based on the concept of Web design technologies and Java programming. 1. Design a Login Page by using HTML and CSS. 2. Write a program to perform validation on web page. 3. Design a web page to demonstrate registration form of student. 4. Design a from by using HTML and CSS who will take input from the user through Java-script Function and check weather it is integer or not. 5. Design a device friendly web page which should be able to resize the display depending on the device by using bootstrap. 6. Write a Java program to create an abstract class named shape that contains two integers and an empty method named print Area () Provide three classes named Rectangle, Triangle and Circle such that each one of the classes extends the class shape. Each one of the class contains only the method print Area () that print the area of the given shape. 7. Write a Java program that implements a multithreaded program that has three threads. First thread generates a random integer every 1 second and if the value

	is odd the third thread will print the value of the cube of the number. 8. Write a java program which creates a list containing Ice cream flavours. On selection of any flavour price should be displayed in a text field. 9. Write a JDBC program to create a table product (id number, name varchar, Price varchar). And insert a record in the table. 10. Write a program to execute a select query using JDBC. 11. Write a program to execute an Update query using JDBC. 12. Write a server program to return the square root of a number to the client using Socket. 13. Write a server program to return Date and time to clients using socket programming. 14. Write a JSP program for basic arithmetic functions. 15. Write a advance java program to implement registration of student by using JSP. 16. Write a program to design a web page for login form and connect to the database while using JSP and JDBC. 17. Write a program to design a simple calculator using (a) JavaScript (b) Servlet and (c) JSP. 18. A web application that lists all cookies stored in the browser on clicking "List Cookies" button. Add cookies if necessary. 19. Write a java program that connects to a database using JDBC and does add, delete, modify and retrieve operations. 20. Develop an applet that displays a simple message.

Part C: Learning Resources
Text Books, Reference Books, Other Resources

Suggested Readings:

1. The Complete Reference JAVA, Herbert Scheldt, Tata McGraw Hill publication, 5th Edition.
2. Advance JAVA, Gajendra Gupta, Firewall Media, 1st Edition, 2006.
3. JAVA network programming, Elliotte Rusty Harold, O'Reilly Publication, 3rd Edition.
4. Core Java for Beginners, Rashmi Kanta Das, Vikas Publishing House Pvt. Ltd.
5. Internet and Internet Engineering, Daniel Minoli, TMH (Latest Edition)
6. Java Script, Gosslin, Vikas (Latest Edition)
7. HTML The Definite Guide, Chuck musiano& Bill Kenndy, O Reilly (Latest Edition).

E Resources:

1. Introduction to web-app
   https://www.youtube.com/watch?v=1Znp3tRRTzw&list=PLJ5C_6qdAvBEJ6-TBzKoa1Oy21IwDrJfM&index=22

TBzKoa1Ov211wDzJM&index=23

- Building web-app
  https://www.youtube.com/watch?v=hJEn4L4AQIE&list=PLJ5C_6qdAvBEJ6-TBzKoa1Ov211wDzJM&index=2
- Introduction to Java Script
  https://www.youtube.com/watch?v=fRbP92o8cp0&list=PLJ5C_6qdAvBEJ6-TBzKoa1Ov211wDzJM&index=10
- Introduction to Database
  https://www.youtube.com/watch?v=mc0HIicUKo4&list=PLJ5C_6qdAvBEJ6-TBzKoa1Ov211wDzJM&index=12
- Introduction to SQL
  https://www.youtube.com/watch?v=q2oaKyOsPw0&list=PLJ5C_6qdAvBEJ6-TBzKoa1Ov211wDzJM&index=16
- Introduction to Java
  https://www.youtube.com/watch?v=OjdT2l-EZJA&list=PLfh3eNtmZdPOe1R_wO_h540QNiMkCQ0ho&index=1

Part D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:
Maximum Marks: 50
Continuous Comprehensive Evaluation (CCE): Not Applicable
University Exam(UE): 50 Marks

Internal Assessment: *Continuous Comprehensive Evaluation (CCE)*	Class Test/Assignment/Presentation	Not Applicable

Declaration

The syllabus of this subject is frame as per the TOR of department of higher education, Chhattisgarh.

1. Dr. H.S. Hota - Chairman
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Date: 03.06.2022

Paper III
प्रयोगशाला (प्रश्नपत्र I तथा II पर आधारित)
Practical (Based on papers I and II)

1. केन्द्रीय प्रवृत्ति की माप, विक्षेपण, विषमता एवं कुकुदता की गणना ।
Calculation of Measures of Central Tendency, dispersion , skewness and kurtosis.

2. गुणन आघूर्ण सहसंबंध गुणांक एवं सहसंबंध अनुपात की गणना ।
Calculation of Product Moment Correlation and Correlation Ratio.

3. न्यूनतम वर्ग विधि द्वारा वक्रों का आवासन ।
fitting of curve by least square method.

4. दो चरों के लिए न्यूनतमवर्ग समीपवरण का आवासन करना ।
Fitting of Curves by the least square method.

5. विषमतामैत्र कोटि सहसंबंध की गणना ।
Calculation of Spearman's Rank correlation Coefficient.

6. तीन चरों के लिए बहुसमाश्री समाश्रयण की गणना ।
Calculation of Multiple regression for three variables.

7. तीन चरों के लिए बहुसहसंबंध एवं आंशिक सहसंबंध की गणना ।
Calculation of Multiple correlation and partial correlation for three variables.

8. गणितीय प्रत्याशाओं की गणना । प्रत्याशा की सहायता से माध्य, प्रसरण विषमता और कुकुदता की गणना करना ।
Calculation of mathematical expectations. Using Expectation find mean, variance, skewness and Kurtosis.

9. द्विपद, पॉयसों और प्रसामान्य बंटनों का आवासन ।
Fitting of Binomial, Poisson and Normal distribution.

B.A. / B.Sc. II Year
Subject-Statistics

Paper-I
Statistical Methods

उद्देश्य – यह पाठ्यक्रम आंकड़ों के संकलन एवं विश्लेषण के प्रयोग की विभिन्न विधियों के साथ छात्रों को परिचित करता है, जिसमें सैद्धांतिक एवं व्यावहारिक दोनों पहलुओं पर ध्यान केन्द्रित किया जाएगा ।

Outcome: This course is useful for the students conversant with various techniques used in summarization and analysis of data. The focus will be both on theoretical as well as practical

Nonparametric tests: Definition of order statistics and their distributions, Non-parametric tests, Sign test for univariate and bivariate distributions, Wilcoxon test, Mann-Whitney test, Run test, median test and Spearman's rank correlation test.

Unit V

चार संक्षिप्त टिप्पणी, प्रत्येक इकाई से एक पूछा जाएगा। छात्रों को किन्हीं दो का उत्तर देना है।

Four short notes, one from each unit will be asked. Students have to answer anytwo.

REFERENCES

1. Frund J.E.(2001)Mathematical Statistics, Prentice Hall of India.
2.Goon A.M., Gupta M.K., Das Gupta.B. (1991):Fundamentals of Statistics, Vol.I, World Press, Culcutta.
3. Gupta and Kapoor: Fundamentals of Mathematical Statistics S.Chand & Sons.
4.Hodges, J.L. and Lehman E.L. (1964): Basic Concepts of Probability and Statistics, Holden Day.
5.Mood A.M, Graybill F.A and Boes D.C. (1974): Introduction to the Theory of Statistics, McGraw Hill.

ADDITIONAL REFERENCES

1. Bhat B.R., Shrivenkatramana T and Rao Madhava K.S. (1997): A Beginner's Text, Vol. II, New age International (P) Ltd.
2. Rohatgi, V.K. (1967): An Introduction to Probability Theory and Mathematical Statistics, John Wiley & Sons.
3. Snedecor, G.W. and Cochran W.G. (1967): Statistical Methods. Lowa State University Press.

Paper-II

प्रतिचयन सिद्धांत और प्रयोगों की अभिकल्पना

Sampling Theory and Design of Experiments

उद्देश्य– छात्र प्राप्त करेंगे

(अ) पूर्ण गणनाओर प्रतिदर्श, प्रतिदर्श फ्रेम, प्रतिदर्श वंटन, प्रतिचयन और गैर प्रतिचयन त्रुटियों का बुनियादी ज्ञान, प्रतिदर्श सर्वेक्षण के प्रमुख चरण, प्रतिचयन की सीमाएं आदि।

(ब) विभिन्न सांख्यिकीय प्रतिचयन योजनाओं जैसे सरल, स्तरीकृत और यादृच्छिक प्रतिचयन से पेश किया गया।

(स) प्रतिदर्श सर्वेक्षण आयोजित करने और उपयुक्त प्रतिदर्श तकनीक का चयन करने का विचार।

(द) विभिन्न प्रतिचयन तकनीकों की तुलना करने के बारे में ज्ञान।

(इ) विचरण का एक तरफा और दो तरफा विश्लेषण करना।

(ई) प्रयोगों के अभिकल्पना में प्रयुक्त मूल शब्दों को समझें।

(उ) प्रयोगात्मक आंकड़ों का विश्लेषण करने के लिये उपयुक्त प्रयोगात्मक अभिकल्पनाओं का उपयोग करें।

(ऊ) [illegible] लागू करें।

Outcomes: The students shall get:

(1) basic knowledge of complete enumeration and sample, sampling frame, sampling distribution, sampling and non-sampling errors, principal steps in sample surveys, limitations of sampling etc.,

(2) introduced to various statistical sampling schemes such as simple, stratified and

systematic sampling.
(c) an idea of conducting the sample surveys and selecting appropriate sampling techniques.
(d) knowledge about comparing various sampling techniques.
(e) carry out one way and two way Analysis of Variance.
(f) understand the basic terms used in design of experiments.
(g) use appropriate experimental designs to analyze the experimental data.
(h) apply Multiple range tests, the multiple t-test.

UNIT-I

प्रतिदर्श सर्वेक्षण का अभिकल्पन, प्राचल और सांख्यिकी प्रतिदर्श सर्वेक्षण में मिश्रण चरण, प्रतिदर्श सर्वेक्षण का सिद्धांत, प्रतिदर्शन और गैर प्रतिदर्शन त्रुटियां, पूर्ण जनगणना पर प्रतिदर्श का लाभ, प्रतिदर्श की सीमाएं । प्रतिदर्शन के प्रकार : व्यक्तिपरक या निर्णय प्रतिदर्शन, प्रायिकता प्रतिदर्शन, मिश्रित प्रतिदर्शन।
सरल यादृच्छिक प्रतिदर्शन (प्रतिस्थापन के साथ और बिना) , सरलय यादृच्छिक प्रतिदर्शन के गुण और सीमाएं। सरलय यादृच्छिक प्रतिदर्श के चयन की विधियां, लॉटरी विधि, यादृच्छिक संख्याओं के आधार पर विधि। विचरण माध्य / कुल का आकलन और उनकी विन्यास और मानक त्रुटियां, प्रतिदर्श आकार का निर्धारण, विशेषताओं के लिए सरलय यादृच्छिक प्रतिदर्शन ।

Design of Sample Surveys, parameter and Statistics, principle step in sample survey, inciple of sample survey, sampling and non-sampling errors advantage of sampling over complete enous, limitations of sampling, Types of Sampling: Subjective or Judgement sampling, Probability sampling, mixed sampling. Simple random sampling (with and without eplacement), Merits and limitations of Simple random sampling, Methods of selecting imple random sample, lottery method, method based onrandom numbers. Estimation of population mean/total and their variances and standard errors, determination of sample size, simple random sampling for attributes.

UNIT-II

सरतीकृत यादृच्छिक प्रतिदर्शन: सादृश्यण के सिद्धांत, सांख्यन, स्तिरों संख्या और निष्पत्ति का आकलन, समग्र माध्य संख्या, आनुपातिक और इष्टतम आवंटन , समग्र यादृच्छिक प्रतिदर्शन के साथ स्तरीकृत प्रतिदर्शन की तुलना ।

Stratified random sampling, principles of stratification, notations, estimation of population mean and variances, cost function, allocation techniques, proportional and optimum allocations, comparison of stratified sampling with simple random sampling.

UNIT-III

विचरण का विश्लेषण (एनोवा) परिभाषा , एनोवा परीक्षण के लिए अनुप्रयोग, विविध प्रभाव मॉडल के लिए परीक्षण मॉडल और प्रति एकांश एक वर्गीकरण का एक आयामी और द्विआयामी वर्गीकरण में प्रभाव का विश्लेषण। टकी परीक्षण ।
प्रयोगों के अभिकल्पन का परिचय, सहायकी प्रयोग, नियंत्रण , प्रयोगिक इकाई, यादृच्छिकरण, स्थानिक नियंत्रण, प्रतिरूपण त्रुटि, परिशुद्धता एवं उपयोगिता। प्रयोगों के अभिकल्पन की आवश्यकता, मूलभूत और यादृच्छिक के आकलन और आकार, प्रयोगों के अभिकल्पन के मौलिक सिद्धांत, यादृच्छिकरण आवृत्ति और स्थानीय नियंत्रण ।

Analysis of variance (ANOVA): Definition, assumption for ANOVA test, Mathematical model and Analysis of variance in one way and two way classification for fixed effect model with one observation per cell, Tukey test.
Introduction to design of experiments, completely randomized experiments, randomized block experiments, experimental error, replication, precision and accuracy, need for design of experiments, size and shape of plots and blocks, fundamental principles of design of experiments: Randomization, Replication and Local control.

UNIT-IV

पूर्ण यादृच्छिक अभिकल्पना (सी.आर.डी.) यादृच्छिक खण्ड अभिकल्पना (आर.बी.डी.),लैटिन वर्ग अभिकल्पना (एल.एस.डी.) और उनका अभिन्यास और विश्लेषण, बहुपरासी [illegible] परीक्षण। बहुगुणी टी–परीक्षण।

Completely Randomized Design (CRD), Randomized Block Design (RBD), Latin Square Design(LSD) and their layout and analysis. Multiple range tests, the multiple t- test.

UNIT V

चार संक्षिप्त टिप्पणी, प्रत्येक इकाई से एक पूछा जाएगा। छात्रों को किन्हीं दो का उत्तर देना है।

Four short notes one from each Unit will be asked. Students have to answer any two.

REFERENCES

1. Cocran W.G. (1977): Sampling Techniques, John Wiley and Sons.
2. Des Raj (2000): Sample Survey Theory, Narosa Publishing House.
3. Murthy M.N(1967): Sampling Theory and Methods, Statistical Publishing Society, Calcutta.
4. Singh, D. and Chaudhary,F.S. (1986): Theory and analysis of Sample Survey Designs. New Age International Publisher.
5. Sukhatme P.V., Sukhatme B.V., Sukhatme S. and Ashok C.(1984), : Sample Survey Methods and Its Applications, Indian Society of Agricultural Statistics, New Delhi.
6. Das M.N. and Giri (1986) : Design and analysis of experiments,springer verlag.
7. Goon A.M.,Gupta M.K.,Das Gupta B. (1986): Fundamentals of Statistics, Vol.II, World Press, Calcutta.
8. Joshi,D.D.(1987):Linear Estimation and Design of Experiments,Wiley Eastern.
9. Kempthorne O.(1965) : The Design and Analysis of Experiments,Wiley Eastern.

Paper III

प्रयोगात्मक (प्रश्नपत्र I तथा II पर आधारित)

Practical (Based on papers I and II)

1. मानकीकृत [illegible] के आधार पर सतत बंटन से प्रतिदर्शों का चयन जैसे कि द्विपद, प्वॉसां, सामान्य, कोशी और घातीय बंटन।

   drawing random samples from standard univariate discrete and continuous distributions such as Binomial, Poisson, Normal, Cauchy and Exponential.

2. स्टूडेंट टी, काईवर्ग, एफ परीक्षण के आधार पर सार्थकता का परीक्षण। [illegible] की सार्थकता का परीक्षण। जेड रूपांतरण का उपयोग, [illegible] में माध्य और प्रसरण के समानता का परीक्षण।

   Tests of significance based on Student's t, Chi-square, F. Test of significance of sample correlation coefficient. Use of Z Transformation. Testing of equality of means and equality of variance in sampling from bivariate normal.

3. [illegible] सार्थकता का परीक्षण।

   Large sample tests for means and proportions, tests of goodness of fit and independence of attributes in contingency tables.

4. गैर–प्राचलिक परीक्षण, [illegible] परीक्षण।

Nonparametric tests: Sign, Run, Median, Wilcoxon, Mann-Whitney tests.

5. प्रतिदर्श का चयन और प्रतिदर्श के आकार का निर्धारण। सामान्य यादृच्छिक प्रतिचयन, स्तरीकृत और व्यवस्थित प्रतिचयन। स्तरीकृत प्रतिचयन में प्रतिदर्शों के बटन की समस्या। आकलन के अनुपातीय और समाश्रयण विधियाँ।

Selection of samples and determination of sample size. Simple random sampling, Stratified and systematic sampling. Allocation problem in stratified sampling. Ratio and regression methods of estimation.

6. एक आयामी और द्वि-आयामी वर्गीकरण के लिए, प्रसरण का विश्लेषण। पूर्ण यादृच्छिक अभिकल्पना, यादृच्छिक खंडीय अभिकल्पना और लैटिन वर्ग अभिकल्पनाओं का विश्लेषण। 2^3 और 2^3 प्रयोगों का विश्लेषण।

Analysis of variance for one way and two way classifications. Analysis of CRD, RBD and LSD. Analysis of 2^3 and 2^3 experiments.

B.A. /B.Sc. III Year
Subject: Statistics

Paper/I
अनुप्रयुक्त सांख्यिकी
Applied Statistics

परिणाम: छात्र इसे जानेंगे
(अ) विभिन्न विधियों द्वारा सूचकांक संख्या की गणना ।
(ब) समय श्रृंखला आंकड़े, अलग क्षेत्रों में इनके अनुप्रयोग और इनके घटक।
(स) अनेक वृद्धि वक्रों का आलेखन और अभिदेशन
(द) अनेक विधियों द्वारा रुझान और मौसमी आघातों का आकलन ।
(य) यदृच्छ घटक विधि द्वारा यादृच्छिक अवयव के प्रसरण की गणना ।
(र) सामाजिक दीर्घ अवस्था का आय बंटन और इसके आकलन।

Outcome: the students will know about
(a) Computation of Index Numbers by various methods.
(b) time series data, its applications to various fields and components of time series.
(c) fitting and plotting of various growth curves.
(d) fitting of trend and seasonal components by various methods.
(e) calculation of variance of random component by various component method.
(f) income inequalities and curve fitting in real life situations.

Unit I