GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR
DEPARTMENT OF MATHEMATICS

Minutes of the Meeting

Date: Aug.16, 2022

Today on 16/08/2022at 3:00PM in the Room No. 36 of UTD A-winga meeting of theBoard of Studies in hybrid mode has been conducted.The following members are present in the meeting:

1) Dr. J. P. Jaiswal, Chairman, BOS
2) Prof. Bankteshwar Tiwari, External Subject Expert, BOS
3) Dr. Omkar L.al Shrivastava, Special Invitee, BOS
4) Prof. A.S. Ranadive, Member BOS
5) Dr. M. K. Gupta, Member BOS
6) Dr. Sandeep Singh, Special Invitee
7) Dr. B. B. Chaturvedi, Special Invitee
8) Dr. Santosh Verma, Special Invitee

In the hybrid mode meeting the following points have been concluded:

1. The syllabus of the course "Mathematical Statistics" (Code: AMPBTD5) of M. Sc. 2nd sem. (w.e.f. AY 2021-22) is approved (Annexure-I).
2. The syllabus of the course "Research Methodology" (Code: AMUBTT3) of M. Sc. 2nd sem. (w.e.f. AY 2021-22) is approved (Annexure-II).
3. The syllabus of the course "Theory of Interpolation" (Code: AMUBTA1) of B. Sc. 2nd sem. (w.e.f. AY 2021-22) is approved (Annexure-III).
4. The correct name of the course (Code: AMPBTD6) is "Riemannian Manifold and Connections" of M. Sc. 2nd sem. (w.e.f. AY 2021-22) is approved.
5. The correct name of the course (Code: AMPCTD6) is "Integral Equations" of M. Sc. 2nd sem. (w.e.f. AY 2021-22) is approved.
6. The syllabus of the course "History of Indian Mathematics"with (Code: AMUCTG2) of B. Sc. 3rdsem. (w.e.f. AY 2021-22) is approved (Annexure-IV).

The Chairman, BOS extended his thanks to all the members.

Dr. J. P. Jaiswal

Prof. Bankteshwar Tiwari
(Approved on email)

Dr. Omkar Lal Shrivastava

Prof. A.S. Ranadive

Dr. M. K. Gupta

Dr. B. B. Chaturvedi

Dr. Santosh Verma

Dr. Sandeep Singh

M Gmail   HoD_Maths. GGV <hodmathsggv@gmail.com>

Files related to BoS meeting (to be conducted after your consent) Reg.

Bankteshwar Tiwari <banktesht@gmail.com>   Wed, Aug 24, 2022 at 3:17 PM
To: "HoD_Maths. GGV" <hodmathsggv@gmail.com>

Dear Dr Jaiswal,
It is Ok from my side. Therefore approved.
all the best
Bankteshwar
[Quoted text hidden]
--

Bankteshwar Tiwari
DST-Centre for Interdisciplinary Mathematical Sciences
Institute of Science
Banaras Hindu University
Varanasi-221005
INDIA

The syllabus of M. Sc. 2ndSem. optional paper name-Mathematical Statistics (Code: AMPBTD5) (which is the committed part of minutes of BoS meeting of M. Sc. (CBCS) held on 13/01/2022).

Code: AMPBTD5Mathematical Statistics

Course objective: To learn about curvilinear regression, multiple and partial correlation, sampling, hypothesis testing, theory of attributes.

Expected Outcomes: After completion of this paper students will be able to handle the real world problems regarding uncertainty of certain kind associated with random experiment. They may perform test of hypothesis as well as calculate confidence interval for a population parameter for single sample and two sample cases, learn non-parametric test such as the Chi-square test for independence as well as goodness of fit, compute and interpret the results of bivariate and multivariate regression and correlation analysis, for forecasting. This paper is also useful for further study of statistics.

Basics of Random Variables: Introduction of Probability, Discrete and continuous random variables, probability mass function, probability density function, expectation, normal distribution.

Large Sample Theory: Types of sampling, parameter and statistic, tests of significance, procedure for testing of hypothesis, tests of significance for large samples, sampling of attributes, sampling of variables.

Exact sampling distributions-I: Derivation of the chi-square distribution, M.G.F. of chi-square distribution, some theorems on chi-square distribution, applications of chi-square distribution.

Exact sampling distributions-II: Students 't' distribution, Fisher's 't', applications of t-distributions, distribution of sample correlation coefficient when population correlation coefficient is zero(ρ=0), F-distribution, applications of F-distribution, relation between t and F distributions, relation between F and chi-square distributions, Fisher's z-distribution, Fisher's z- transformation.

Theory of estimation: Estimators, characteristics of estimators, Cramer-Rao inequality, complete family of distributions, methods of estimation, confidence interval and confidence limits.

Correlation and regression: Linearregression (introduction) and curvilinear regression, regression curves, correlation ratio, multiple and partial correlation, plane of regression, properties of residuals, coefficient of multiple correlation, coefficient of partial correlation, multiple correlation in terms of total and partial correlation, expression for regression coefficient in terms of regression coefficients of lower order, expression for partial coefficient in terms of regression coefficients of lower order.

Text Book:
1. S.C. Gupta and V. K. Kapoor: Fundamentals of Mathematical Statistics, S. Chand and Sons, New Delhi (2004).

Reference Books
1. M. Ray and H. S. Sharma: Mathematical Statistics, Ram Prasad & Sons (1966).
2. D. N. Elhance, Fundamentals of Statistics, KitabMahal (1964).

The syllabus of M. Sc. 2ⁿᵈSem.compulsory paper name-Research Methodology (Code: AMPBTT3) (which is the committed part of minutes of BoS meeting of M. Sc. CBCS held on 13/01/2022).

Code: AMUBTT3: Research Methodology

Course objective: The purpose of the present course is to give the details idea of the research methodology to the students for the purpose of research project and future research works.

Expected Outcomes: After the completion of the course student will be able to understand basic elements of the research and systematics process research development.

Foundations of Research: Meaning, Objectives, Motivation, Utility. Concept of theory, empiricism, deductive and inductive theory. Characteristics of scientific method, Understanding the language of research, Concept, Construct, Definition, Variable. Research Process.

Research Design: Concept and Importance in Research, Features of a good research design, Exploratory Research Design, Descriptive Research Designs, Experimental Design: Concept of Independent & Dependent variables. Basic idea of few software's.

Reference book:

1. C. R. Kothari: Research Methodology: Methods Techniques , New Age International, 2004

2. P. K. Khatua and P. R. Majhi: Research Methodology Concepts Methods Techniques, Himalaya Publishing House, 2016

The syllabus of B. Sc. 2nd Sem. AEC paper name-Theory of Interpolation (Code: AMUBTA1) (which is the committed part of minutes of BoS meeting of B. Sc. LOCF held on 13/01/2022).

Code: AMUBTA1: Theory of Interpolation

Course objective: The purpose of the present course is to give the basic idea of some interpolation techniques which may be used in various reallife problems.

Expected Outcomes: After the completion of the course student will be able to understand the applicability situation of various interpolation techniques and it may be used in day to day life problems also.

Finite Difference: Forward difference, backward difference, central difference, difference of polynomial, other difference operator etc.

Interpolation: Introduction, Newton's forward interpolation formula, Newton's backward interpolation formula, Central difference interpolation formula, Gauss's forward and backward interpolation formula, Stirling's and Bessel's formulae.

Interpolation with unequal intervals: Lagrange's interpolation formula, divided difference, Newton's divided difference formula.

Text Books:
1. Jain M K, Iyengar S R K and Jain R K, Numerical Methods for Scientific and Engineering Computation, 4th Edn, New Age International Pvt Ltd (2005)
2. S S Sastry, Introductory Methods of Numerical Analysis, 5th Edn. Prentice Hall of India.

Reference book:
1. Jain M K, Numerical Solutions of Differential Equations, 2nd Edn. John Wiley and Sons Ltd (1984)

The syllabus of B. Sc. 3rd Sem. Generic elective paper name- History of Indian Mathematics (Code: AMUCTG2) is added now.

(which is the remaining part of minutes of BoS meeting of B. Sc. LOCF held on 13/01/2022).

Generic Elective

Code: AMUCTG2: History of Indian Mathematics

History of Origin of Mathematics, The Number Symbols Arithmetic Operations, Ancient and Early Medieval Indian Mathematics, Early Hindu Mathematics, Hindu Arithmetic and Algebra, Hindu Geometry and Trigonometry, History of Mathematics in South Asia.

About Mathematics in Vedas, The *Sulba-Sutras*, The Vedas and Astronomy, The Jyotisa-Vedanga, Vedic India and Ancient Mesopotamia.

Mathematics in Ancient, Early Medieval and Medieval India

Numbers and Numerals, Astronomy, Astrology and Cosmology, Mathematics in Jain and Buddhist texts.

Geocentric Astronomy, Evolution of the Siddhanta and Astronomical Schools, Astronomical Calculations in Siddhantas, Geometric modes in Astronomy

MedievealMathematics:- Mathematics in Siddhanatas, Bakhshah Manuscript, Ganita-Sara-Sangraha.

The Development of "Canonical" Mathematics:- Mathematician and Society, About work Bhaskara& Narayana Pandita, Mathematical writing and thought.

The School of Madhava in Kerla:- Background, Lineage, Infinite Series and other Mathematics, Astronomy and Scientific Methodology, Questions of Transmission.

Exchanges with the Islamic World:- Indian Mathematics in the word, Mathematical Encounters in India, Influence and Synthesis.

Continuity and Changes in the Modern period:-Individuals, Families and Schools, Contacts with Europe, Mathematics and Astronomy, 1500-1800

Recommended Text Books:-
1. Mathematics in India by Kim Plofker

Suggested Readings:-
1. Mathematical Thought from Ancient to Modern Times volume-1 by Morris Kline
2. Culture and History of MathematicsEdited Volume editor C.S.Seshadri
3.वेदों में विज्ञान लेखक डॉकपिलदेव.द्विवेदी

Course outcomes:-
After completing this course student is supposed to:
1. Learn about the history of contribution of Indian mathematics from Vedic era to medieval period.
2. Learn about the role of perception, inference, analogy and authoritative testimony in Indian mathematics.
3. Understand substantial differences between mathematics in the India tradition and its counter parts.
4. Multiply the interest by manifold in the traditional Indian mathematical development from numbers to Calculus, Infinite series, Geometry and Astronomy