Plan of Action and Achieved of the Department of Mathematics for the session 2021-22

Serial No.	Plan of Action	Details of the Plan	Achieved or not	Reason/ Remarks
1	Induction Programme	a) Overview of curriculum based on CBCS pattern and evaluation pattern (CGPA and SGPA), feedback mechanism is given, as the system is a new concept for the students b) The induction programme is conducted to familiarize the students about the process of teaching learning through online mode, timings of the classes and technology used. c) The programme will provide a scope of interaction with the faculty members and peer group d) Briefing on extensive social activities through NSS and NCC, extracurricular and cultural events. e) Addressing the queries of new joiners.	Yes	Induction Programme conducted on 12/09/2021
2	Curriculum Module Allocation	a) The department follows the curriculum and syllabus as prescribed by the affiliating university (Bankura University). In each semester the syllabus is distributed in modules and the stipulated syllabus is completed, and the topics are taught as per the credits allocated to each topic. b) Distribution of syllabus	Yes (Annexures 1 and 2 stating Syllabus Allocation and CO, PO respectively are attached)	Syllabus Module Allocation remained same as per the allocation of 2020-21.

		in modules and unitization of syllabus were prepared well before the commencement of classes and executed in a planned and systematic manner. c) Course Outcome, Programme Outcome and Programme Specific Outcome are also formulated.		
3	Maintenance of Students Attendance Register	Day to day attendance is recorded in the ERP as the classes are conducted in online mode.	Yes	
4	Continuous Assessment of Students	Continuous assessment is carried out by the department in the form of Surprise Test, Oral Test etc. Internal assessment examinations are held prior to every end semester examinations for the courses of Bankura University.	Yes	Internal Examination of all the Semesters were conducted in online mode through submission of assignments.
5	Completion of syllabus	Syllabus is covered for all courses of UG program within the stipulated time period.	Yes	
6	Result Analysis	Result analysis is done according to result sheet provided by the Universities. After critical analysis of the results, the students are advised about how to improve in University examination.	Yes (Annexure 3 stating result analysis of Semester I,II,III and IV and 3rd year of BU students are attached)	
7	Remedial Classes	Remedial classes are conducted for each semester on the basis of suggestions provided by the student representatives who propose the topics that require special attention. Sometimes in the remedial classes, evaluated and assessed answer scripts are shown to the students for their self-analysis and better understanding of the subject.	Yes	
8	Students Support Facilities	a) Flexible class timings for the students b) E books and lecture PDFs are supplied through ERP	Yes	

		c) PPTs are uploaded in college ERP d) Concessions and free-ship to economically weak students. e) Career guidance f) Curricular and extra-curricular activities in online g) Prize Awarded as encouragement to achievers in studies or sports h) Merit-based scholarships		
9	Library Facilities	a) Central Library is a rich in collection of books of different branches of Mathematics. b) The central library is automated and students have bar-coded library cards. c) The central library has a spacious reading hall. d) Departmental Library operates with limited resource, and caters primarily to financially weak students.	Yes	
10	Student Seminar	Students-seminar are organized in online mode to ensure a) Develop communication skills of students b) Boost their confidence c) Develop their presentation skills d) Overcome the fear of facing the audience Topics of the seminar may be departmental syllabi based.	Yes	
11	Co-curricular Activities	Students of the department participate in various co-curricular activities such as Quiz contest and other cultural programmes organized in the college. .	NO	Could not participate because of lock down.
12	Students Feedback	Feedback is taken from students for individual teachers and analyzed for future improvement.	Yes	
14	Developing E-	Faculty Members upload e-notes at Study Materials Section in	Yes	

	Content	College ERP which the students can access free. Besides e-materials on important topics are uploaded in the college website as well.		
15	Perspective Plan	5 years Perspective Plan is framed after discussion in departmental meeting with suggestions from student's representative and IQAC Coordinator	Yes Attached in the website	

Annexure 1: Syllabus Module Allocation of Mathematics Semester I and Semester II (2018-19) under Bankura University

SYLLABUS MODULE

Mathematics Honours

Semester I (BKU)

Course Code	Course Title	Faculty Name	Full Marks	Credit	No. of Classes
SH/MTH/101/C1	Calculus, Geometry & Differential Equation	RB,CDG	50	6	60 (Tentatively)
SH/MTH/102/C2	Algebra	AI,MN	50	6	60
SH/MTH/101/GE1	Calculus, Geometry & Differential Equation	CDG	50	6	60 (Tentatively)

Semester II (BKU)

Course Code	Course Title	Faculty Name	Full Marks	Credit	No. of Classes
SH/MTH/201/C3	Real Anlysis	AI,RB	50	6	60 (Tentatively)
SH/MTH/202/C4	Differential Equations and Vector Calculus	CDG,AI	50	6	60
SH/MTH/203/GE2	Real Anlysis	CDG	50	6	60 (Tentatively)

Semester III (BKU)

Course Code	Course Title	Faculty Name	Full Marks	Credit	No. of Classes
SH/MTH/301/C5	Theory of Real Functions & Introduction to Metric Space	CD,RB	50	6	60 (Tentatively)
SH/MTH/302/C6	Group Theory-I	MN	50	6	60
SH/MTH/303/C7	Numerical Methods Numerical Methods Lab	AI	50	6	60
SH/MTH/304/GE3	Algebra	CDG,RB	50	6	60
SH/MTH / 305/SEC-1	Programming Using C	AI	50	2	20

Semester IV (BKU)

Course Code	Course Title	Faculty Name	Full Marks	Credit	No. of Classes
SH/MTH/401/C8	Riemann Integration and Series of Functons	MN	50	6	60 (Tentatively)
SH/MTH/402/C9	Multivariate Calculus	AI	50	6	60
SH/MTH/403/C10	Ring Theory and Linear Algebra-I	RB	50	6	60
SH/MTH/404/GE4	Differential Equations and Vector Calculus	CDG	50	6	60
SH/MTH/405/SEC2	Graph Theory (SEC T4)	RB	50	6	60

Semester V (BKU)

Course Code	Course Title	Faculty Name	Full Marks	Credit	No. of Classes
SH/MTH/501/C11	Partial Differential Equations and Applications	RB	50	6	60 (Tentatively)
SH/MTH/502/C12	Group Theory - II	MN	50	6	60
SH/MTH/503/DSE1	Linear Programming	CD	50	6	60
SH/MTH/504/DSE2	Probability and Statistics	AI	50	6	60

Semester VI (BKU)

Course Code	Course Title	Faculty Name	Full Marks	Credit	No. of Classes
SH/MTH/601/C13	Metric Spaces and Complex Analysis	RB	50	6	60 (Tentatively)
SH/MTH/602/C14	Ring Theory and Linear Algebra II	CDG	50	6	60
SH/MTH/603/DSE3	Number Theory	MN	50	6	60
SH/MTH/604/DSE4	Project Work	AI	50	6	60

AI== DR. MD. ASIF IKBAL

RB== DR. RIMA BARIK

MN== SRI MADHAB NANDI

CDG== SRI CHANDI DAS GOP

References:

For Calculus, Geometry & Differential Equation (C1)

1. G.B. Thomas and R.L. Finney, Calculus, 9th Ed., Pearson Education, Delhi, 2005.
2. M.J. Strauss, G.L. Bradley and K. J. Smith, Calculus, 3rd Ed., Dorling Kindersley (India) P. Ltd. (Pearson Education), Delhi, 2007.
3. H. Anton, I. Bivens and S. Davis, Calculus, 7th Ed., John Wiley and Sons (Asia) P. Ltd., Singapore, 2002.
4. R. Courant and F. John, Introduction to Calculus and Analysis (Volumes I & II), SpringerVerlag, New York, Inc., 1989.
5. S.L. Ross, Differential Equations, 3rd Ed., John Wiley and Sons, India, 2004.
6. Murray, D., Introductory Course in Differential Equations, Longmans Green and Co.
7. G.F.Simmons, Differential Equations, Tata Mcgraw Hill.
8. T. Apostol, Calculus, Volumes I and II.
9. S. Goldberg, Calculus and mathematical analysis.

For Algebra(C2)

1. Titu Andreescu and Dorin Andrica, Complex Numbers from A to Z, Birkhauser, 2006.
2. Edgar G. Goodaire and Michael M. Parmenter, Discrete Mathematics with Graph Theory, 3rd Ed., Pearson Education (Singapore) P. Ltd., Indian Reprint, 2005.
3. David C. Lay, Linear Algebra and its Applications, 3rd Ed., Pearson Education Asia, Indian Reprint, 2007.
4. K.B. Dutta, Matrix and linear algebra.
5. K. Hoffman, R. Kunze, Linear algebra.
6. W.S. Burnstine and A.W. Panton, Theory of equations.

For Real Analysis (C3)

1. R.G. Bartle and D. R. Sherbert, Introduction to Real Analysis, John Wiley and Sons (Asia) Pvt. Ltd.
2. Gerald G. Bilodeau , Paul R. Thie, G.E. Keough, An Introduction to Analysis, Jones & Bartlett.
3. Tom M. Apostol, Mathematical Analysis, Narosa Publishing House
4. W. Rudin, Principles of Mathematical Analysis, Tata McGraw-Hill
5. Terence Tao, Analysis I, Hindustan Book Agency.
6. S.K. Mapa, Introduction to Real Analysis, Levant Books, India
7. S.C.Mallik, Savita Arora, Mathematical Analysis, New age International Publication

For Differential Equations and Vector Calculus (C4)

1. Belinda Barnes and Glenn R. Fulford, Mathematical Modeling with Case Studies, A Differential Equation Approach using Maple and Matlab, 2nd Ed., Taylor and Francis group, London and New York.
2. C.H. Edwards and D.E. Penny, Differential Equations and Boundary Value problems Computing and Modeling, Pearson Education India.
3. S.L. Ross, Differential Equations, John Wiley and Sons, India.
4. Martha L Abell, James P Braselton, Differential Equations with MATHEMATICA, Elsevier Academic Press.
5. G.F.Simmons, Differential Equations, Tata Mc Graw Hill
6. Marsden, J., and Tromba, Vector Calculus, McGraw Hill.
7. Maity, K.C. and Ghosh, R.K. Vector Analysis, New Central Book Agency (P) Ltd. Kolkata (India).
8. M.R. Speigel, Schaum's outline of Vector Analysis

For Theory of Real Functions & Introduction to Metric Space (C5)

1. R. Bartle and D.R. Sherbert, Introduction to Real Analysis, John Wiley and Sons.
2. K.A. Ross, Elementary Analysis: The Theory of Calculus, Springer.
3. Tom M. Apostol, Mathematical Analysis, Narosa Publishing House.
4. W. Rudin, Principles of Mathematical Analysis, Tata McGraw-Hill
5. Terence Tao, Analysis II, Hindustan Book Agency.

6. S. Kumaresan, Topology of Metric Spaces, 2nd Ed., Narosa Publishing House.
7. G.F. Simmons, Introduction to Topology and Modern Analysis, McGraw-Hill.
8. Joydeep Sengupta, Metric Space, U. N. Dhur Publication

For Group Theory-I (C6)

1. M. Artin, Abstract Algebra, 2nd Ed., Pearson.
2. Joseph A. Gallian, Contemporary Abstract Algebra, Narosa Publishing House.
3. Joseph J. Rotman, An Introduction to the Theory of Groups, Springer.
4. I.N. Herstein, Topics in Algebra, Wiley Eastern Limited, India.
5. D.S. Malik, John M. Mordeson and M.K. Sen, Fundamentals of abstract algebra, McGraw-Hill.

For Numerical Methods Numerical Methods Lab (C7)

1. M.K. Jain, S.R.K. Iyengar and R.K. Jain, Numerical Methods for Scientific and Engineering Computation, 6th Ed., New age International Publisher, India.
2. C.F. Gerald and P.O. Wheatley, Applied Numerical Analysis, Pearson Education, India.
3. S.A. Molla, Numerical Analysis and Computational Proceedures, Books & Allied Ltd.

For Riemann Integration and Series of Functons (C8)

1. K.A. Ross, Elementary Analysis, The Theory of Calculus, Undergraduate Texts in Mathematics, Springer (SIE), Indian reprint.
2. R.G. Bartle D.R. Sherbert, Introduction to Real Analysis, John Wiley and Sons (Asia) Pvt. Ltd.
3. Santi Narayan, Dr. P. K. Mittal, Integral calculus, S. Chand.
4. T. Apostol, Calculus I, II, Wiley Student Edition.

For Multivariate Calculus (C9)

1. E. Marsden, A.J. Tromba and A. Weinstein, Basic Multivariable Calculus, Springer (SIE), Indian reprint.
2. James Stewart, Multivariable Calculus, Concepts and Contexts, Brooks /Cole, Thomson Learning, USA.
3. Tom M. Apostol, Mathematical Analysis, Narosa Publishing House

4. Courant and John, Introduction to Calculus and Analysis, Vol II, Springer
5. W. Rudin, Principles of Mathematical Analysis, Tata McGraw-Hill
6. Marsden, J., and Tromba, Vector Calculus, McGraw Hill.
7. Maity, K.C. and Ghosh, R.K. Vector Analysis, New Central Book Agency (P) Ltd. Kolkata (India).
8. Terence Tao, Analysis II, Hindustan Book Agency, 2006
9. M.R. Speigel, Schaum's outline of Vector Analysis.

For Ring Theory and Linear Algebra-I (C10)

1. M. Artin, Abstract Algebra, 2nd Ed., Pearson.
2. Joseph A. Gallian, Contemporary Abstract Algebra, 4th Ed., Narosa Publishing House, New Delhi.
3. S. Lang, Introduction to Linear Algebra, Springer
4. Kenneth Hoffman, Ray Alden Kunze, Linear Algebra, Prentice-Hall of India Pvt. Ltd.

For Graph Theory(SEC 2)

1. Edgar G. Goodaire and Michael M. Parmenter, Discrete Mathematics with Graph Theory, Pearson Education (Singapore) P. Ltd.
2. Swapan Kumar Sarkar, A Textbook of Discrete Mathematics, S. Chand
3. RM. Somsundaram, Discrete Mathematics, Prentice Hall Of India

For Partial Differential Equations and Applications (C11)

1. Tyn Myint-U and Lokenath Debnath, Linear Partial Differential Equations for Scientists and Engineers, Springer, Indian reprint.
2. S.L. Ross, Differential equations, John Wiley and Sons, India.
3. Sneddon, I. N., Elements of Partial Differential Equations, McGraw Hill.
4. Miller, F. H., Partial Differential Equations, John Wiley and Sons.

For Group Theory II (C12)

1. M. Artin, Abstract Algebra, Pearson.
2. Joseph A. Gallian, Contemporary Abstract Algebra.
3. D.S. Malik, John M. Mordeson and M.K. Sen, Fundamentals of abstract algebra.
4. I.N. Herstein, Topics in Algebra, Wiley Eastern Limited, India.

For Linear Programming (DSE1)

1. Hamdy A. Taha, Operations Research, An Introduction, Prentice-Hall India
2. G. Hadley, Linear Programming, Narosa Publishing House

For Probability and Statistics (DSE2)

1. A. Gupta, Ground work of Mathematical Probability and Statistics, Academic publishers.

2. Irwin Miller and Marylees Miller, John E. Freund, Mathematical Statistics with Applications, 7th Ed., Pearson Education, Asia.
3. N.G.Das, Probability, Mc Graw Hill.
4. N.G.Das, Statistical Methods, Mc Graw Hill.

For Metric Spaces and Complex Analysis (C13)

1. S. Kumaresan, Topology of Metric Spaces, Narosa Publishing House.
2. G.F. Simmons, Introduction to Topology and Modern Analysis, McGraw-Hill.
3. James Ward Brown and Ruel V. Churchill, Complex Variables and Applications, 8th Ed., McGraw – Hill International Edition.
4. Joydeep Sengupta, Metric Space, U. N. Dhur Publication.

For Ring Theory and Linear Algebra II(C14)

1. S. Lang, Introduction to Linear Algebra, Springer.
2. Gilbert Strang, Linear Algebra and its Applications, Thomson.
3. S. Kumaresan, Linear Algebra- A Geometric Approach, Prentice Hall of India.
4. Kenneth Hoffman, Ray Alden Kunze, Linear Algebra, Prentice-Hall of India Pvt. Ltd.
5. M. Artin, Abstract Algebra, Pearson.

For Number Theory (DSE 3)

1. David M. Burton, Elementary Number Theory, Tata McGraw-Hill .
2. Neville Robinns, Beginning Number Theory, Narosa Publishing House Pvt. Ltd.

KHATRA ADIBASI MAHAVIDYALAYA

SYLLABUS MODULE

Mathematics Programme

Semester I

Semester	Course Code	Course Title	Faculty Name	Full Marks	Credit	No. of Classes
I	SP/MTH/101/C - 1A	Calculus, Geometry & Differential Equation	CDG	50	6	60 (Tentatively)

Semester II

Semester	Course Code	Course Title	Faculty Name	Full Marks	Credit	No. of Classes
II	SP/MTH/201/C - 1B	Real Analysis	CDG	50	6	60 (Tentatively)

Semester III

Semester	Course Code	Course Title	Faculty Name	Full Marks	Credit	No. of Classes
III	SP/MTH/301/C -1C	Algebra	CDG	50	6	60 (Tentatively)
III	SP/MTH/304/ SEC-1	Logic and Sets	RB			

Semester IV

Semester	Course Code	Course Title	Faculty Name	Full Marks	Credit	No. of Classes
IV	SP/MTH/401/C - 1D	Differential Equations and Vector Calculus	AI	50	6	60 (Tentatively)
IV	SP/MTH/404/ SEC-2	Graph Theory	RB			

CDG == SRI CHANDI DAS GOP

RB== DR. RIMA BARIK

AI == DR. MD. ASIF IKBAL

References:

1. Das, Mukherjee, Differential Calculus, U.N.Dhur & Sons Pvt. Ltd.
2. Shantinarayan, Mittal, Differential Calculus, S, Chand Publications
3. Chakraborty, Ghosh, Advanced Analytical Geometry, U.N.Dhur & Sons Pvt. Ltd.
4. Maity, Ghosh, Differential Equations, New Central Book Agency

Annexure 3: Result Analysis of the Department of Mathematics for the session 2021-2022

Result Analysis of Department of Mathematics 2021-2022:

Name of the Course/programme	Total No. of Students Appeared	No of Students Passed	Pass Percentage
U.G. 1st Semester (Hons) Bankura Univarsity	10	10	100%
U.G. 2nd Semester (Hons) Bankura Univarsity	09	09	100%
U.G. 3rd Semester (Hons) Bankura Univarsity	09	09	100%
U.G. 4th Semester (Hons) Bankura Univarsity	09	09	100%
U.G. 5th Semester (Hons) Bankura Univarsity	09	09	100%
U.G. 6th Semester (Hons) Bankura Univarsity	09	09	100%

Annexure 4: Departmental Research and Publications in the session 2021-2022

Publications

Sl. No.	Title of the publication with page no. and year of publication	Name of the of publisher	ISSN/ ISBN No.	No. of Co-author	Whether you are the main author
1	e-Content Development for Teaching and Learning Higher Mathematics (Book Chapeter), Md Asif Ikbal	Crescent Publishing Corporation	ISBN: 978-93-91771-51-5	1	Yes

Participation and Paper Presentation:

1. Dr. Md. Asif Ikbal Participated 5 day faulty development Programme on Mathematical Biology and Biostatistics, July 26-30, 2021, organised by Amity University, Kolkata