

UNIVERSITY OF KERALA
School of Distance Education

Bachelor of Science (Mathematics)
PROGRAMME PROJECT REPORT

1. Program's Mission and Objectives

Mission

In keeping with the overall mission of the School of Distance Education, University of Kerala, to ensure accessibility of quality higher education to all, the program BSc Mathematics aims at imparting knowledge in Mathematics and skills in using it in the graduate level with the following points.

Dedicated to increasing the understanding of mathematics through enhancing education and for a more informed society.

To impart the principles and practices of mathematics, so that the students are encouraged to promote their expertise. They will be prepared to pursue degrees and to apply their mathematical skills to careers in industry.

Objectives

- To provide our majors with sufficient understanding and experience of mathematics to pursue their careers or graduate study of mathematics.
- To provide students in other programs using mathematics with robust mathematical tools they can use immediately, together with an understanding sufficient to grasp future quantitative developments in their fields.
- To enable students in other majors to gain a greater level of quantitative literacy as part of a foundation for lifelong learning and critical thinking, so that they can more fully participate in the deliberations of an advanced technological society.

2. Relevance of the program with HEI's Mission and Goals

Offered in the distance mode, BSc Mathematics will be closely aligned with the vision and mission of the University of Kerala, in vowing to ensure knowledge based, student focused, quality and cost conscious but socially responsible education.

BSc Mathematics in the distance mode will be a feeder program for the MSc Mathematics programs offered by the university, and it follows the same syllabus and curriculum of the program offered in the regular mode through the affiliated colleges of the University of Kerala.

3. Nature of prospective target group of learners:

BSc Mathematics has wide demand, and only a small percentage of the students are being accommodated in the regular mode through colleges. This program will join the attempt to democratising higher education to large segments of the population, providing an innovative system of university level education that is flexible and open in terms of methods, pace of

learning, eligibility for enrolment and age of entry.

Understanding the needs of the learners we have structured our learning material and induction programs to lead the fresh learners through the threshold of higher education, and lead them through the course of the program and the final evaluation.

4. Appropriateness of program to be conducted in Open and Distance Learning mode to acquire specific skills and competence:

- The BSc Mathematics program will see to ensure knowledge, skills and competences in the learners. The specific learning outcomes of the program are given below:
- Comprehensive knowledge in mathematical theory at an advanced level.
- Ability to use theoretical and empirical methods to analyse mathematical problems.
- Exposure to various quantitative techniques which are essential to analyse mathematical problems.
- Analyze existing mathematical models and evaluate their relevance for practical problem solving.
- Planning and carrying out applied work and research projects in Mathematics.
- Critical thinking capacity.
- Ability for hypothesizing and problem solving.
- Capability in using computer software for the purpose of research work in Mathematics.

4. Instructional Design:

Sem.	Course Code	Course Title	No. of Credits	CE (Marks)	ESE (Marks)	Total
I	EN 1 1 1 1	Language Course I(English- I)	4	20	80	100
	M/H 1 1 1 1	Language Course II (Addl. Language)	3	20	80	100
	EN 1121	Foundation Course- I	2	20	80	100
	MM 11 4 1	Core- I-Methods of Mathematics	4	20	80	100
	CO 1 1 3 1	Complementary I - Fundamentals of Financial Accounting	2	20	80	100

	ST 1 1 3 1.1	Complementary II- Descriptive Statistics and Introduction to probability	2	20	80	100
		TOTAL	17	120	480	600
II	EN 1 2 1 1	Language Course III (English II)	4	20	80	100
	EN 1 2 1 2	Language Course IV (English III)	3	20	80	100
	M/H 1 2 1 1	Language Course V (Addl. Language II)	3	20	80	100
	MM 1221	Foundations of Mathematics	4	20	80	100
	CO 1 2 3 1	Complementary III- Advanced Financial Accounting	2	20	80	100
	ST 1 2 3 1.1	Complementary IV- Random variables	2	20	80	100
		TOTAL	18	120	480	600
III	EN 1 3 1 1	Language Course VI (English- IV)	4	20	80	100
	M/H 1 3 1 1	Language Course VII (Addl. Language III)	4	20	80	100
	MM1 3 4 1	Core III - Algebra & Calculus-I	4	20	80	100
	CO 1331	Complementary V-Cost Accounting	3	20	80	100
	ST 1331.1	Complementary VI-Probability distribution and theory of estimation	3	20	80	100
		TOTAL	18	100	400	500
IV	EN 1 4 1 1	Language Course VIII (English V)	4	20	80	100
	M/H 1411	Language Course IX (Addl. Language IV)	4	20	80	100
	MM 1441	Core IV-Algebra & Calculus-II	4	20	80	100
	CO 1431.1	Complementary VIII - e-Commerce	3	20	80	100

	CO 1431.2	Complementary IX- Management Accounting	3	20	80	100
	ST 1431.1	Complementary VIII- Testing of hypothesis and analysis of variance	3	20	80	100
	ST 1432.1	Complementary practical using excel	4	20	80	100
		TOTAL	25	140	560	700
V	MM 1 5 4 1	Core VI- Real Analysis I	4	20	80	100
	MM 1 5 4 2	Core VII Complex Analysis I	3	20	80	100
	MM 1 5 4 3	Core VIII - Differential Equations	4	20	80	100
	MM 1 5 4 4	Core IX - Vector Analysis	4	20	80	100
	MM 1 5 4 5	Core X-Abstract Algebra I	4	20	80	100
	MM 1 5 5 1	Open Course-	2	20	80	100
	MM 1 6 46	Project Work	-	-	-	-
		TOTAL	21	120	480	600
VI	MM 1 6 4 1	Core XI - Real Analysis II	4	20	80	100
	MM 1 6 4 2	Core XII - Linear Algebra	4	20	80	100
	MM 1 6 4 3	Core XIII- Complex Analysis II	4	20	80	100
	MM 1 6 44	Core -14 Abstract Algebra II	3	20	80	100
	MM 16 45	Computer Programming (Practical)	4	20	80	100
	MM 1 6 61	Elective Course-Graph Theory	3	20	80	100
	MM 1646	Project	4	80+20 (Viva)		100
		TOTAL	26	120	580	700

		GRAND TOTAL	125	680	2820	3700
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06 Duration of the program

Six semesters, three years.

07 Faculty and support staff requirement

There are two full time faculty members available and one of them can coordinate the B.Sc Program in Mathematics. There is sufficient staff support from the SDE for processing administrative work. The service of qualified guest teachers and experts from panels approved by the Vice Chancellor are used in the preparation of SLM, for taking contact classes and conducting internal evaluation.

8. Instructional delivery mechanisms

In addition to providing Self Learning Material, students are offered 60 contact hours each semester, conducted over 10 days during the weekend. Classes are taken using audio visual aids, and students are encouraged to use web resources. A collection of audio/video lectures are being prepared, which will be made available to the learners on an experimental basis from this academic year onwards.

10. Procedure for admissions, curriculum transaction and evaluation:

Applications for admissions are received online. Eligibility for admission to BSc Mathematics is a pass in Higher Secondary Examination with Mathematics as one of the subjects of the State or an Examination accepted by the University as equivalent thereto.

11. **Fee structure** : Rs. 15445/- for entire programme.

12. Academic Calendar

ADMISSION		
Admission Notification	First week of June	
Closing date of Admission	Last week of September	
Schedule of distribution of study materials		
Course	Date	By Post
III, IV, V and VI Semester	Last week of June	Last week of July
I & II Semester	Last week of October	Last week of November
Schedule of contact classes		
Course	Schedule	
III, IV, V and VI Semester	First week of July	
I & II Semester	First week of November	
Schedule of examinations		
Course	Schedule	
V and VI Semester	First week of April	

III and IV Semester	Second and Third week of April
I and II Semester	Fourth week of April

13. Financial Assistance

Concession for tuition fee will be given to SC/ST and OEC students. The students belonging to SC/ST and OEC category will be admitted to the programme without remitting the tuition fee. The fee for the students thus admitted will be later claimed from SC/ST department as per the rules laid down by the government of Kerala and will be remitted to Kerala University Fund (KUF).

14. Curriculum transaction and evaluation

Curriculum is transacted in the Distance Mode with the help of Self Learning Material and Personal Contact Classes. The uses of web-based tools are not in place yet, but steps are being initiated. Evaluation is continuous and end semester. Continuous Evaluation requires the submission of one assignment and one Test Paper for the course carrying 20 marks per paper. End Semester Examinations are conducted by the Controller of Examinations, University of Kerala. The written exams carry 80 marks perpaper.

15. Requirement of the laboratory support and Library Resources:

Laboratory hours are mandatory for B.Sc Mathematics. For computer papers, students can avail the computers in the Central Computer Lab of the School of Distance Education which has continuous internet connectivity.

The SDE has a separate Library with more than 23,000 books. Library automation is done using LibSoft software which facilitates all in-house operations of the library. The library currently subscribes to more than 15 journals of various subject fields. An amount of Rs. 500/- has to be remitted by the students to obtain membership in the Library, of which Rs.400/- will be refunded on completion of the course. The non members can make use of the library resources and the reference services by producing their student's ID proof. They can use the library for reference purpose and they can avail photocopy facilities.

16. Cost estimate of the program and the provisions: (Base 2019-20)

Sl.No	Expenditure	Total for the SDE during 19-20 (25987 students) (Rs. in lakh)	Cost estimate for B. Sc Mathematics programme (150 students)
01	Pay and Allowance	435.00	667400
02	Contact classes and evaluation	80.00	30700
03	Course materials	100.00	38400
04	Advertisement charges	25.00	9600
05	Postage and telephone	7.4	2800
06	Books and Periodicals	3.5	1300
07	Miscellaneous	9.95	3800
	Total	660.85	754000
	Provisions (6%)		45240

	Total		799240 Cost per student/ year=Rs.5328
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17. Quality assurance mechanism and expected program outcomes:

The University Board of Studies for Mathematics programs will approve and review the syllabus, course content, and the Self Learning Material of B. Sc Mathematics offered in the distance mode also.

The overall ensuring of quality will be closely monitored by the Centre for Internal Quality Assurance, School of Distance Education.

17. Expected Programme Outcomes

Towards the end of the programme, students will be able to:

- Apply fundamental principles and methods of Mathematics to a wide range of applications.
- To develop the ability to analyze mathematical problems.
- To formulate the critical problems in daily life to mathematical model.
- To motivate research activities in various field in Mathematics, statistics, population and applied mathematics.
- To prepare for other eligible job areas in state and central govt.

Note: The programme structure is based on the present syllabus existing in the regular mode in the University of Kerala. The UG and PG syllabi in the regular mode in the University is currently being revised and is about to be finalized. SDE will adopt the revised syllabus as such when they are finalized for the 2020-21 admission. The SLMs will also be updated accordingly.


DIRECTOR
 School of Distance Education
 University of Kerala, Kariavattom
 Thiruvananthapuram - 695 581

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