

ST. JOSEPH'S COLLEGE (AUTONOMOUS) BENGALURU-27



Re-accredited with 'A++' GRADE with 3.79/4 CGPA by
NAAC Recognized by UGC as College of Excellence

DEPARTMENT OF MATHEMATICS

Syllabus for Bachelor of Science (Basic/Hons.)

Under National Education Policy

For Batch 2021 (Onwards)

Name of the Degree Program: B.Sc.

Discipline Core: Mathematics

Total Credits for the Program: 176 (till 8 semesters)

Starting year of implementation: 2021-22

Second Semester

Open Elective-3

MTOE -3: Mathematics for Biologists	
Teaching Hours : 3 Hours/Week	Credits: 3
Total Teaching Hours: 42 Hours	Max.Marks:100 (S.A.-60+I.A.-40)

Course Learning Outcomes: This course will equip the students with the necessary mathematical tools to perform computational aspects of Biology, Chemistry and other Natural Science subjects.

UNIT I:

LCM and GCF, Fractions, Addition, subtraction, multiplication and division of fractions, Decimals and percentages. Unitary method. Ratios and proportions. Conversion of units (SI system). Solving system of linear equations and application to balancing chemical equations using matrices. Spatial arrangement of atoms. Coordinate geometry. Understanding basic functions and plotting their graphs: straight line, exponential and logarithmic function etc. Least square method. **14 Hours**

Unit II:

Basics of differentiation and integration and simple illustration of them in chemistry and biology. **14 Hours**

Unit III:

Permutations and combinations and application to genetic code. Probability theory: calculating the probability of occurrence of biological events. Statistical methods. Frequency distributions. Frequency distribution graphs. Central tendency. Binomial distribution and Normal distribution with examples. Standard deviation and its significance. **14 Hours**

Reference books

1. Alan J. Cann, Maths from Scratch for Biologists, Wiley and sons Ltd, 2003.
2. David C Lay, Linear Algebra and its applications, Third edition, Pearson, 2013.
3. Irwin H. Segel, Biochemical Calculations: How to Solve Mathematical Problems in General Biochemistry, 2nd Edition, Wiley (1976)
4. Peter Atkins, Julio de Paula, Physical Chemistry for the Life Sciences, W.H. Freeman & Company (2011)
5. Athel Cornish-Bowden, Basic Mathematics for Biochemists, First Edition, London New York, Chapman and Hall, 1981
6. Peter C. Foster, Easy Mathematics for Biologists, CRC Press (1999)
7. Raymond Chang, Jr. Thoman John W, Physical chemistry for the chemical sciences, University Science Books (2014)
8. Erich Steiner, The Chemistry Maths Book, Second Edition, Oxford University Press

Blueprint

	Unit-I	Unit-II	Unit-III	Number of Questions to be answered	Total
2 Marks	4	4	4	10/12	20
5 Marks	3/5	2/3	3/5	8/13	40