



DR. D. Y. PATIL VIDYAPEETH

PIMPRI, PUNE – 411 018

DR. D. Y. PATIL BIOTECHNOLOGY & BIOINFORMATICS INSTITUTE

TATHAWADE, PUNE

SYLLABUS FOR

SEMESTER I

**B. TECH BIOTECHNOLOGY, B. TECH MEDICAL BIOTECHNOLOGY, M. TECH (INT.)
BIOTECHNOLOGY**

(BATCH 2018-19)

DR. D.Y. PATIL VIDYAPEETH, PUNE
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B. TECH BIOTECHNOLOGY, B. TECH MEDICAL BIOTECHNOLOGY, M. TECH
(INT.) BIOTECHNOLOGY

Academic year 2018-2019

SEMESTER I						
Course Code	Course Name	L	T	P	Hr	Cr
BS 101	Physics	3	0	2	5	4
BS 102	Chemistry	3	0	4	7	5
BT 101	Electronics & Instrumentation Engineering	3	0	2	5	4
BI 101	Computers & C Programming	3	0	4	7	5
HU 101	Communication Skills	1	2	0	3	3
BS 103	Maths I – Mathematics	3	1	0	4	4
BT 102	Engineering Graphics	2	0	2	4	3
HU 102	Disaster Management*	0	1	0	1	-
Total		18	4	14	36	28
<i>*Audit course, attendance is must</i>						

TITLE OF THE COURSE: Maths I - MATHEMATICS**COURSE CODE: BS-103****MARKS: 100****L T P Hr C****3 1 0 4 4****OBJECTIVE**

The objective of the course is to familiarize the student with basic concepts in mathematics.

LEARNING OUTCOME

At the end of the course, the students will have sufficient understanding of different mathematics and statistical tools used in Biotechnology. This knowledge would be applicable in different industries

PREREQUISITES

Students should be familiar with school level mathematics to take up this course. In case they do not have mathematics at the 10+2 level they should have cleared the core mathematics in the first semester.

COURSE DESCRIPTION.

Sr.	Topics	Description	Lectures
1	Algebra :	Logarithms: Definition of Logarithm (Natural and common logarithm, Laws of Logarithm. Binomial Theorem: Definition of factorial notation, peronntation & combinations, Binomial Theorem for positive index. General term, middle term, Binomial theorem for any index Binomial Theorem for Approximation	06
2	Trigonometry	Trigonometric Rations (t-ratios): t-ratios of any angle, Relation between t-ratios, Fundamental identities, Quadrants sign of T-ratios in various quadrants, T-ratios of negative angles T-ratios of Allied, Multiple and Submultiples angles, Factorization formulae, Defactorization formulae. Inverse Trigonometric Functions: Definition of Inverse t-functions	03 08
3	Function and Limit	Function: Definitions of variable, constant, intervals such as open, closed, semi-open etc., Definitions of function, value of function, domain & range of a function. Limits: Concepts and definition of Limit, Limits of algebraic functions, trigonometric functions, exponential functions, logarithmic function	02 06
4	Derivatives	Derivatives: Definition of Derivatives, notations, Rules of Derivatives (without proof), Derivatives of composite functions, Derivatives of Inverse trigonometric function by substitution method, Derivatives of Implicit functions, Logarithmic differentiation, Second order	05

		differentiation Application of Derivatives: Geometrical meaning of the derivatives, Equations of Tangent & normal to the given curve, Maxima & Minima.	04
5	Integration	Integration: Definition of integration, Integration of Standard function; Rules of Integration, Integration of rationale functions; Trigonometric functions to determine constant of Integration. Definite Integration: Definition of Definite integral, definite, Definite integral with simple problems Application of Definite Integrals: Area under the curves, Area between two curves.	03 02 02
6	Differential Equation (D.E.)	Definition of D.E., order & degree of D.E., formation of D.E for function containing single constant. Solution of D.E. of first order & first degree such as: i) Variable separable type. ii) reducible to variable separable form iii) Exact D.E iv) Linear D.E v) Bernoulli's D.E.	03
Total Number of Lectures			44

METHODOLOGY

The course will be covered through lectures supported by tutorials. In tutorials difficulties would be solved. Problems would be given. Students would be given assignments in the form of questions. There will be two class tests/ and surprise test conducted during the tutorial classes.

EVALUATION SCHEME (THEORY)

Examination	Duration	Marks
I Internal	60 minutes	20
II Internal	45 minutes	15
Attendance		05
End Semester Exam	2 hours 30 minutes	60
Total		100

BOOKS RECOMMENDED:

- 1) Mathematics for Biological Science by J. Arya & Ladner, Prentice Hall, 1979.
- 2) Numerical methods by E. Balguruswamy, Tata Mc Graw Hill Publications Pvt Ltd., 1999.
- 3) Higher Engineering Mathematics by B. S. Grewal, Khana Publication, New Delhi, 2003.
- 4) Applied Mathematics by P. N. Wartikar, Pune Vidaypeeth, Griha Prakashan, Pune, 2010.
- 5) Introductory Methods of Numerical analysis by S. S. Sastry, Prentice Hall of India, New Delhi. 2005.