GANPAT UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

Programme	Bachelor of Technology	Branch/Spec.	Computer Science and Business Systems
Semester		Version	1.0.0.0
Effective from Academic Year	2026-27	Effective from the batch admitted in	July 2026
Course Code	2BSC1108	Course Name	Introductory Topics in Statistics, Probability and Calculus
Course Category	Basic Science Courses (BSC)		

Teaching Scheme						Examination scheme (Marks)			
(Per week)	Lecture (DT)		Practical (Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	0	0	0	3	Theory	50	50	100
Hours	3	0	0	0	3	Practical	0	0	0

Pre-requisites:

Basic algebra, Elementary functions and Coordinate geometry (basic)

Course Outcomes

COs	Description
CO1	Analyse data using various statistical methods.
CO2	Understand the concepts of probability and random variables and apply them in solving real-world problems.
CO3	Apply the knowledge of differential calculus in optimizing functions of single variables.
CO4	Evaluate double, triple integrals and apply them in finding the area and volume of solids

Theory Syllabus

Unit	Content	Hours
1	**Introduction to Statistics:** Definition of Statistics. Basic objectives. Applications in various branches of science with examples. Collection of Data: Internal and external data, Primary and Secondary Data. Population and sample, Representative sample. Descriptive Statistics: Classification and tabulation of univariate data, graphical representation, Frequency curves. Descriptive measures - central tendency and dispersion. Bivariate data. Summarization, marginal and conditional frequency distribution.	
2	**Probability:** Concept of experiments, sample space, event. Definition of Combinatorial Probability. Conditional Probability, Bayes Theorem. Probability distributions: discrete & continuous distributions, Binomial, Poisson and Geometric distributions, Uniform, Exponential, Normal, Chi-square, t, F distributions. Expected values and moments: mathematical expectation and its properties, Moments (including variance) and their properties, interpretation, Moment generating function.	
3	**Calculus:** Basic concepts of Differential and integral calculus, application of double and triple integral.	

Practical and Self Learning Content

Practical, assignments, quiz, industrial visit, field survey and tutorials are based on the above syllabus.

Text Books

1	Introduction of Probability Models, S. M. Ross, Academic Press, N.Y.

2	Fundamentals of Statistics, vol. I & II, A. Goon, M. Gupta, and B. Dasgupta, World Press.
3	Higher Engineering Mathematics, B. S. Grewal, Khanna Publication, Delhi.
Reference Books	
1	A first course in Probability, S. M. Ross, Prentice-Hall.
2	Probability and Statistics for Engineers, (Fourth Edition), I. R. Miller, J.E. Freund and R. Johnson, PHI.
3	Introduction to the Theory of Statistics, A. M. Mood, F.A. Graybill and D.C. Boes, McGraw Hill Education.
4	Advanced Engineering Mathematics, (Seventh Edition), Peter V. O'Neil, Thomson Learning.
5	Advanced Engineering Mathematics, (Second Edition) M. D. Greenberg, Pearson Education.
6	Applied Mathematics, Vol. I & II, P. N. Wartikar and J. N. Wartikar, Vidyarthi Prakashan.
ICT/MOOCs Reference	
1	https://nptel.ac.in/courses/111/105/111105121/
2	https://nptel.ac.in/courses/111/105/111105041/
3	https://nptel.ac.in/courses/106/107/106107220/

Mapping of COs, POs, and PSOs														
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	3	3	2	1	2	0	2	0	0	2	3	3	3
CO2	3	3	3	2	1	2	0	2	0	0	2	2	2	1
CO3	3	3	2	2	1	1	0	2	0	0	2	2	2	1
CO4	3	3	3	2	1	1	0	0	0	0	2	2	2	1

Bloom's Taxonomy Level				
Unit	**Unit Title**	**Aligned COs**	**Learning Hours**	**BTL Level**
1	**Introduction to Statistics**	CO1	15	U, E, A
2	**Probability**	CO2	15	R, E, A
3	**Calculus**	CO3, CO4	15	E, A

Note:

- Version 1.0.0.0 (First Digit= New syllabus/Revision in Full Syllabus, Second Digit=Revision in Teaching Scheme, Third Digit=Revision in Exam Scheme, Forth Digit= Content Revision)
- 1 Hour Lecture = 1 Credit, 1 Hour Tutorial = 1 Credit, 2 Hours Practical = 1 Credit, 2 Hours Internship/Project/Seminar = 1 Credit
- Bloom's Taxonomy Level (BTL): R: Remember, U: Understand, A: Apply, N: Analyze, E: Evaluate, and C: Create