



Kot Bhalwal, Jammu

Model Institute of Engineering  
& Technology (Autonomous)  
Course Handout

## COURSE HANDOUT

BUSINESS MATHEMATICS AND STATISTICS (BCMMJ-101)

B.COM HONS – I<sup>ST</sup> SEMESTER

ACADEMIC YEAR (2024-25)

**Dr. Pallavi Sharma**

Assistant Professor

Department of Applied Sciences and Humanities



UG-School of Management

Model Institute of Engineering & Technology (Autonomous)

Kot Bhalwal, Jammu - 181122

[www.mietjmu.in](http://www.mietjmu.in)



Dr. Arun K. Gupta Teaching-Learning Centre

Version 1.1

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Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
							Sessional	Final Exam	Total
BCMMJ-101	Business mathematics and statistics	Major	4	4	0	0	40	60	100

### COURSE OUTCOMES

At the end of the course the student will be able to:	
CO1	To help students understand the concept of business mathematics and statistics and its importance in quick decision making.
CO2	To apply the concept of Mean, Median and Mode which are measures of central tendency.
CO3	To enable students, understand the Measures of dispersion and its applicability in research.
CO4	To equip students with the knowledge of correlation and regression and its applicability in decision making.
CO5	To make students understand how to compute Time series and Index numbers and understand their uses.

**Unit-I: Matrices:** Definition of a matrix. Types of matrices; Algebra of matrices. Calculation of values of determinants up to third order; Ad joint of a matrix; Finding inverse of a matrix through adjoint; Applications of matrices to solution of simple business and economic problems. (10 Hours)

**Unit-II: Basic Mathematics of Finance:** Simple and compound interest Rates of interest–nominal, effective and continuous–their interrelationships; Compounding and discounting of a sum using different types of rates. (9 Hours)

**Unit-II: Uni-Variate Analysis:** Measures of Central Tendency including arithmetic mean, geometric mean, and harmonic mean: properties and applications; mode and median. Partition values - quartiles, deciles, and percentiles. Measures of Variation: absolute and relative. Range, quartile deviation and mean deviation; Variance and Standard deviation: calculation and properties. (10 Hours)

**Unit- IV: Bi Variate Analysis:** Simple Linear Correlation Analysis: Meaning, and measurement. Karl Pearson's co-efficient and Spearman's rank correlation, Simple Linear Regression Analysis: Regression equations and estimation. Relationship between correlation and regression coefficients. (10 Hours)

**Unit-V: Time-based Data: Index Numbers and Time-Series Analysis:** Meaning and uses of index numbers; Construction of index numbers: Aggregative and average of relatives – simple and weighted, Tests of adequacy of index numbers, Construction of consumer price indices. Components of time series; additive and multiplicative models; Trend analysis: Finding trend by moving average method and fitting of linear trend line using principle of least squares. (9 Hours)



### Textbooks

S. No	Name of the Books	Name of the Author	Publisher Name	Edition (Pub.Yr.)
1	Mathematics for Business and Social Sciences Perspective	Mizrahi and John Sullivan	Wiley and Sons.	4 <sup>th</sup> (2012)
2.	Business statistics	C.M. Chikkodi, & Satya Prasad. B	Himalaya publishing house	2 <sup>nd</sup> (2014)

### Reference Books

S. No	Name of the Books	Name of the Author	Publisher Name	Edition (Pub. Yr.)
1	Business Statistics	Aggarwal, S., & Bhardwaj, S Merchant	Kalyani Publisher	18 <sup>th</sup> (2018)

### COURSE PLAN

#### Unit-I Matrices

S. No	Topics	Recommended Books
1	Matrices and its types	Book 1, Ch.1
2	Algebra of Matrices	Book 1, Ch.1
3	Calculation of values of determinants up to third order	Book 2, Ch.1
4	Transpose and Cofactors	Book 2, Ch.2
5	Adjoint of a Matrix	Book 2, Ch.2
6	Inverse of a Matrix	Book 2, Ch.2
7	Application of Matrix	Book 2, Ch.2
<b>Unit-II Basic Mathematics of Finance</b>		
8	Simple and compound interest	Book 1, Ch.2
9	Nominal Rate of interest	Book 1, Ch.2
10	Effective Rate of interest	Book 1, Ch.1
11	Continuous Rate of interest	Book 2, Ch.2
12	Compounding and discounting of sum using nominal rate of interest	Book 2, Ch.2
13	Compounding and discounting of sum using effective rate of interest	Book 2, Ch.2
14	Compounding and discounting of sum using continuous rate of interest	Book 2, Ch.2
<b>Unit-III Uni Variate Analysis</b>		
15	Measures of Central tendency: Arithmetic mean Geometric mean, Harmonic mean, Mode, Median	Book 3, Ch.1
16	Quartiles, deciles, and percentiles	Book 3, Ch.1
17	Range, quartile deviation	Book 3, Ch.2
18	Variance and Standard deviation	Book 3, Ch.2
<b>Unit-IV Bi Variate Analysis</b>		
17	Simple Linear Correlation Analysis	Book 3, Ch.3
18	Karl Pearson's co-efficient	Book 3, Ch.3
19	Spearman's rank correlation	Book 3, Ch.3
20	Simple Linear Regression Analysis	Book 3, Ch.3



21	Relationship between Correlation and Regression Coefficients	Book 3, Ch.3
<b>Unit-V Time-based Data: Index Numbers and Time-Series Analysis</b>		
22	Index numbers – meaning and uses	Book 3, Ch.4
23	Construction of index numbers	Book 3, Ch.4
24	Aggregative and average of relatives – simple and weighted	Book 3, Ch.4
25	Tests of adequacy of index numbers	Book 3, Ch.4
26	Construction of consumer price indices	Book 3, Ch.4
27	Components of time series	Book 3, Ch.4
28	Trend Analysis	Book 3, Ch.4
29	Fitting of linear trend line using principle of least square	Book 3, Ch.4

#### ADDITIONAL WEB RESOURCES

1.	<b>NPTEL LINK:</b> <a href="https://youtu.be/69oJWHkOOK">https://youtu.be/69oJWHkOOK</a> This site contains video lectures on <b>Central tendency and Dispersion intro.</b>
2.	<a href="https://youtu.be/ITX10eS_cuU/">https://youtu.be/ITX10eS_cuU/</a> This site contains video lectures on <b>Correlation and Regression.</b>
3.	<a href="https://archive.nptel.ac.in/courses/112/107/112107260/">https://archive.nptel.ac.in/courses/112/107/112107260/</a> This site contains video lectures on <b>Basic Mathematics of Finance.</b>
4.	<a href="https://archive.nptel.ac.in/courses/111/104/111104098/">https://archive.nptel.ac.in/courses/111/104/111104098/</a> This site contains video lectures on various topics of <b>simple linear regression analysis.</b>
5.	<a href="https://www.digimat.in/nptel/courses/video/111108157/L57.html">https://www.digimat.in/nptel/courses/video/111108157/L57.html</a> This site contains video lectures on <b>Matrices.</b>

#### GRADING AND ASSESSMENT

- **Sessional Test:** 20 marks
- **Assignment:** 10 marks
- **Attendance:** 10 marks
- **Final Examination:** 60 marks

#### COURSE POLICIES

- **Attendance:** Minimum 75% attendance is mandatory to appear in the final examination of the course.
- **Academic Integrity:** MIET's academic integrity policies apply. Plagiarism will not be tolerated.
- **Late Submissions:** Assignments and projects must be submitted by the specified timelines.

#### FACULTY INFORMATION

- **Office Hours**  
Friday (12:55 PM - 1:45 PM)  
Wednesday (12:55 PM - 1:45 PM)
- **Contact Information**  
[pallavi.ash@mietjammu.in](mailto:pallavi.ash@mietjammu.in)



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