

BUSINESS MATHEMATICS AND STATISTICS

UNIT CODE: 0588 451 06A

TVET CDACC UNIT CODE: BUS/CU/HRM/CC/04/5/MA

Duration of Unit: 100 Hours

Relationship to Occupational Standards: this unit addresses the Unit of Competency: Apply Business Calculations and Statistics.

UNIT DESCRIPTION

This unit specifies the competencies required to apply business mathematics and statistics to solve business problems. It involves applying statistical equations, applying statistical matrices, working out commercial mathematics, carrying out elementary statistics, and carrying out descriptive statistics, applying set theory, applying basic probability theory and using index numbers.

Summary of Learning Outcomes

S/No	ELEMENTS	DURATION (HOURS)
1	Work-Out Commercial Mathematics	10
2	Apply Statistical Equations	10
3	Apply Statistical Matrices	18
4	Carry Out Elementary Statistics	14
5	Carry Out Descriptive Statistics	12
6	Apply Set Theory	10
7	Apply Basic Probability Theory	10
8	Use Index Numbers	16
	Total	100

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
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1. Work-out commercial mathematics	1.1 Types of discounts 1.1.1 Cash discount 1.1.2 Trade discount 1.1.3 Quantity discount 1.2 Commissions 1.3 Methods of calculating wages 1.3.1 Piece rate 1.3.2 Hourly rate 1.4 Computing wages and salaries 1.5 Basics of simple and compound interest 1.5.1 Finding principal, rate and time using simple and compound interest formula 1.6 Profit margin and Mark-ups 1.7 Gross pay and net pay calculation 1.8 Depreciation and appreciation of assets 1.9 Determining hire purchase price 1.10 Computation of foreign exchange transactions	• Practical assessment • Portfolio of Evidence • Project • Written assessment • Oral assessment
2. Apply statistical equations	2. 1 Solving linear equations with one or more variables 2.2 Solving quadratic equations 2.2.1 Formula method 2.2.2 Factorization 2.3 Simultaneous equations solutions 2.3.1 Substitution method 2.3.2 Elimination method	• Practical assessment • Portfolio of Evidence • Project • Written assessment • Oral

	2.3.3 Matrix method 2.4 Computation of breakeven analysis 2.5 Calculus 2.5.1 Differentiation 2.5.2 Integration 2.6 Total revenue, total cost and profit equations formulation	assessment
3. Apply statistical matrices	3.1 Notations 3.2 Operations of matrices 3.2.1 Addition 3.2.2 Subtraction 3.2.3 Division 3.2.4 Multiplication 3.3 Solving a 2*2 matrix 3.4 Determinants of a 2*2 matrix 3.5 Inverse of a 2*2 matrix 3.6 Application of matrices in solving business operations	• Practical assessment • Portfolio of Evidence • Project • Written assessment • Oral assessment
4. 4. Carry out elementary statistics	4.1 Introduction to data collection 4.2 Methods of data collection 4.2.1 Primary 4.2.2 Secondary Data 4.3 Sampling techniques 4.3.1 Probability 4.3.2 non-probability 4.4. Methods of data presentation 4.4.1 Tables and diagrams 4.4.1.1.Frequency distribution table 4.4.1.2.Bar charts	• Practical assessment • Portfolio of Evidence • Project • Written assessment • Oral assessment

	4.4.1.3 Pie charts 4.4.1.4 Histogram 4.4.1.5 frequency polygons 4.4.2 Types of graphs 4.4.2.1 Basic time series graphs 4.4.2.2 z-charts 4.4.2.3 Lorenz curves 4.4.2.4 Semi-log graphs 4.5 Cumulative frequency curves (OGIVE)	
5. Carry out descriptive statistics	5.1 Measures of central tendency 5.1.1 Mean 5.1.2 Mode 5.1.3 median 5.2 Measures of dispersion 5.2.1 Variance 5.2.2 Standard deviation 5.3 Measures of skewness 5.4 Measures of kurtosis	• Practical assessment • Portfolio of Evidence • Project • Written assessment • Oral assessment
6. Apply set theory	6.1 Basic set definitions 6.1.1. Set 6.1.2 Element 6.1.3 Empty set 6.2 Operations on sets 6.2.1 Union 6.2.2 Intersection 6.2.3 Difference 6.2.4 Symmetric difference 6.3 Venn diagrams	• Practical assessment • Portfolio of Evidence • Project • Written assessment • Oral assessment

	6.4 Application of set theory	
7. Apply basic probability theory	7.1 Probability events 7.2 Types of events 7.2.1 Simple 7.2.2 Compound 7.2.3 Mutually exclusive 7.2.4 Independent 7.2.5 dependent 7.3 Application of rules of probability 7.4 Application of Bayes' Theorem 7.5 Drawing probability trees 7.6 Application of probability	• Practical assessment • Portfolio of Evidence • Project • Written assessment • Oral assessment
8. Use index numbers	8.1 Formulae for computing index numbers 8.2 Computation of index numbers 8.2.1 Lapser's 8.2.2 Paasche's 8.2.3 Fisher's ideal 8.2.4 Marshal 8.3 Application of index numbers in decision making	• Practical assessment • Portfolio of Evidence • Project • Written assessment • Oral assessment

Suggested Methods of Delivery

- ☐ Practical work by trainees
- ☐ Group discussions
- ☐ Role play
- ☐ Case study

□ Assignments

Recommended Resources for 30 trainees

S/No.	Category/Item	Description/ Specifications	Quantity	Recommended Ratio (Item: Trainee)
A	Learning Materials			
1.	Textbooks		5 pcs	1:6
2.	PowerPoint presentations	For trainer's use		
3.	Projector		1	1;30
4.	Whiteboard		1	1;30
5.	Report writing templates			
6.	Rolls flip charts		1	1;30
7.	Assorted color of whiteboard markers	For trainers Use		
B	Learning Facilities & infrastructure			
1.	Lecture/theory room		1	1:30
2.	Computer Laboratory		1	1:30
C	Consumable materials			
1.	Assorted whiteboard markers		30	1:1
2.	Internet connection		200 mbps	-
3.	Antivirus Software			-
4.	Printing Papers		Enough	-
5.	External storage media		1 tb	-
D	Tools and Equipment			
1.	Printers		2 pcs	2:30
2.	Computers	With Windows /Linux/Macintosh Operating	30pcs	1:1

		System, Microsoft Office Software, Google Workspace Account, Antivirus Software		
3.	Mobile phones		10	10:30