

APPLY BUSINESS MATHEMATICS AND STATISTICS

UNIT CODE: 0588 451 06A

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

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, carrying out descriptive statistics, applying set theory, applying basic probability theory and using index numbers.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace function.	These are assessable statements which specify the required level of performance for each of the elements. <i>Bold and italicized terms are elaborated in the range.</i>
1. Apply statistical equations	1.1 Linear equations are determined as per the objective functions 1.2 Quadratic equations are determined as per the objective functions 1.3 Simultaneous equations are formulated as per the objective functions 1.4 Break-even analysis is computed as per the organization objective. 1.5 Differentiation and integration is carried out as per the objective functions 1.6 Total revenue, total cost and profit equations are formulated as per the organizational objectives.
2. Apply statistical matrices	2.1 Addition, subtraction, division and multiplication formulae are performed as per the order of operations. 2.2 Determinants of 2x2 matrices are calculated as per the order of operations.

	2.3 Inverses of 2x2 matrices are calculated as per the order of operations 2.4 Matrices are applied to business operations as per the organizational objectives.
3. Work-out commercial mathematics	3.1 Discounts are computed as per organization's policy 3.2 Commissions are determined based on the company policies and procedures. 3.3 Methods of calculating wages are determined 3.4 Wages and salaries are computed as per organization policies. 3.5 Simple and compound interests are calculated as per the organization's policy 3.6 Profit margin and mark-up are computed based on organization's policy 3.7 Gross pay and net pay are calculated as per organization's policy 3.8 Depreciation and appreciation of assets are worked-out as per the accounting guidelines. 3.9 Hire purchase price is determined as per the hire purchase agreement 3.10 Foreign exchange transactions are computed as per trade agreements.
4. Carry out elementary statistics	4.1 Methods of data collection are identified as per the organisation's objectives 4.2 Sampling techniques and presentation of data is carried out as per the organisation's objectives. 4.3 Data is presented using Tables and diagrams as per the functions Data is presented using Graphs as per the function

	4.4 Cumulative frequency curves (OGIVE) are drawn and applied.
5. Carry out descriptive statistics	5.1 Measures of central tendency are determined according to Work procedures. 5.2 Measures of dispersion are determined on the basis of Work procedures 5.3 Measures of skewness and kurtosis are analyzed as per the Work procedures.
6. Apply set theory	6.1 Sets types are identified following the set theory. 6.2 Sets operations are performed as per the set theory. 6.3 Venn diagrams are drawn according to the set theory. 6.4 Business problems are solved using set theory.
7. Apply basic probability theory	7.1 Probability events are identified as per the work place requirements. 7.2 Types of events are determined as per the work place requirements. 7.3 Rules of probability are applied based on additive and multiplicative rules. 7.4 Bayes' Theorem is applied as per the theorem rules 7.5 Probability trees are drawn according to events. 7.6 Solve business problems using probability
8. Use index numbers	8.1 Formulae for computing index numbers are identified as per the organization objective. 8.2 Index numbers are computed as per the formula 8.3 Index numbers are applied in decision making as per the organization objective

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

Variable	Range
----------	-------

1. <i>Discounts</i> may include but not limited to:	• Cash discount • Trade discount • Quantity discount
2. <i>Methods of data collection</i> may include but not limited to:	• Primary • Secondary Data
3. <i>Tables and diagrams</i> may include but not limited to:	• Frequency distribution table • Bar charts • Pie charts • Histogram • frequency polygons
4. <i>Graphs</i> may include but not limited to:	• Basic time series graphs • Z-charts • Lorenz curves and • Semi-log graphs
5. <i>Methods of calculating wages</i> may include but not limited to:	• Piece rate • Hourly rate
6. <i>Measures of central tendency</i> may include but not limited to:	• Mean: arithmetic mean, weighted arithmetic mean, geometric mean and harmonic mean • Mode • Median
7. <i>Measures of dispersion</i> may include but not limited to:	• Range • Standard deviation • Variance • Co-efficient of variation • Quartile deviation

8. <i>Index numbers</i> may include but not limited to:	• Laspeyre's • Paasche's • Fisher's ideal • Marshal
---	--

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required skills

The individual needs the following skills:

- Numeracy
- Analytical
- Decision making
- Problem solving
- Critical thinking

Required knowledge

The individual needs the knowledge of:

- Data collection, presentation and analysis
- Business calculations

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

1. Critical Aspects of Competency	<i>Assessment requires evidence that the candidate:</i> 1.1 Formulated Simultaneous equations as per the objective functions 1.2 Computed break-even analysis as per the organization objective 1.3 Formulated total revenue, total cost and profit equations as per the organizational objectives 1.4 Applied statistical matrices as per the order of operations
-----------------------------------	--

	1.5 Computed profit margin and mark-up based on organizations policy 1.6 Computed simple and compound interests as per organization's policy 1.7 Presented data using tables and diagrams as per the functions 1.8 Presented data using graphs as per the function 1.9 Determined measures of dispersion on the basis of work procedures 1.10 Determined measures of central tendency according to work procedures 1.11 Solved business problems using Set theory as per organization objective 1.12 Solved business problems using probability as per organization objective
2. Resource Implications	The following resources should be provided: 2.1 Access to relevant workplace where assessment can take place 2.2 Appropriately simulated environment where assessment can take place 2.3 Materials relevant to the proposed activity or tasks
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1 Practical 3.2 Projects 3.3 Poe evaluation 3.4 Third party reports 3.5 Written tests
4. Context of Assessment	4.1 The competency may be assessed in a workplace or a simulated workplace

5. Guidance information for assessment	5.1 Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.
--	--