### SESSION PLAN

**COURSE:** ABE Level 4 Introduction to Quantitative Methods

**ELEMENT:** Element 1 – Numeracy for business

## **LEARNING OUTCOME 1**

**Apply numeracy and quantitative techniques for use in day-to-day business activities.**

1.1 Perform calculations on different types of numbers

1.2 Express numbers in various forms for making comparisons

1.3 Perform simple financial calculations to obtain values for taking business decisions

**NUMBER OF SESSIONS:** Three – approximately 18 hours in total

**SESSION TOPICS:** Session 1: Performing calculations on different types of numbers

Session 2: Expressing numbers in various forms for making comparisons

Session 3: Performing simple financial calculations

**Note to tutors: This is the recommended session plan for Learning Outcome 1 of Element 1 of the ABE Level 4 Introduction to Quantitative Methods. You should follow the plan, using the activities provided. It is important to enhance all sessions with local examples and case studies, involving the learners ACTIVELY wherever possible. Note that for this unit, the activities come from the study guide owing to the progressive nature of the teaching and the volume of activities available.**

### SESSION 1: Performing calculations on different types of numbers (4-6 hours)

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| **Topic** | **Tutor Activity** | **Slides** | **Learner Activity** | **Formative Assessment** |
| Introduction to session and learning outcomes | **1.1 Perform calculations on different types of numbers**  Use ‘4UIQM E1 Tutor Presentation’ PowerPoint | 1-4 | In small groups, learners should discuss why they think they need to study quantitative methods and also highlight any concerns they may have at this stage. Present their findings to the rest of the class |  |
| Types of numbers | Ask learners to list different types of numbers they are familiar with. Ask them to describe how these are different from each other and whether there are any numbers that fall into more than one class. |  |  |  |
| Show this slide to the learners and compare their answers with the types of numbers in the slide.  Clarify that there are many more categories but the scope of this syllabus is limited to these only | 5 |  |  |
| Application of rules of numeracy | To get the learners started, ask them the following two questions:   1. What are arithmetic operations? 2. Is any difference in how numeracy rules apply to different number types? | 6 |  |  |
| BEDMAS rule | Explain the BEDMAS rule. Make sure that learners understand the order in which various arithmetic operations are performed. Illustrate the application of the rule by using the example in the study guide.  Invite one student from the class to try and solve the part 1 of Activity 1 for the class.  After all learners have attempted all parts clarify any doubts learners may have. | 7-8 | Activity 1- Ask learners to solve part 2 and 3 of activity 1 individually. | E1 LO1 Activity 1 |
| Rules for negative numbers | Show slide 9 and illustrate the rules of negative numbers by giving examples | 9 | Ask learners to answer the question in activity 2. | E1 LO1 Activity 2 |
| Types of fractions | Ask learners if they are aware of the different types of fractions. If they say yes, ask for examples.  Show them slide 10 and explain each type giving examples. | 10 | Learners complete Activity 3 in the class and discuss any queries they may have. | E1 LO1 Activity 3 |
| Numeracy rules for fractions | Next show slide 11 and illustrate the rules of fractions by using examples in the study guide. | 11 |  |  |
| Numeracy rules for decimals | Remind learners of the numeracy rules for decimals. | 12 | Learner should complete Activity 4 individually (not necessarily in the class). | E1 LO1 Activity 4 |
| Conversion of decimals into fractions | Illustrate, using examples, the simple conversion of decimals into fractions and fractions into decimals. | 13 | Learners to complete Activities 5 and 6 in the class and discuss any queries they may have. | E1 LO1 Activity 5  E1 LO1 Activity 6 |
| Explain recurring decimals through examples and explain their treatment. |  | Learner should complete Activity 7 individually (not necessarily in the class). | E1 LO1 Activity 7 |

### SESSION 2: Expressing numbers in various forms for making comparisons (4-6 hours)

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| **Topic** | **Tutor Activity** | **Slides** | **Learner Activity** | **Formative Assessment** |
| Expressing numbers | **1.2 Express numbers in various forms for making comparisons**  Use ‘4UIQM E1 Tutor Presentation’ PowerPoint  Ask learners to list different ways in which numbers can be expressed. Ask them why there are different ways and what they think are the benefits of each. | 14 | Contribute to class discussion. |  |
| Expressing numbers into standard form | Explain exponents or index of its power by using examples.  Explain the reason why numbers are expressed in standard form.  Illustrate through examples the treatment of numbers with a negative exponent.  Show how a number can be expressed in its standard form  Show how a number can be converted from its standard form to its full form. | 15 | Listen and make notes. |  |
| Divide the class into two groups: Group A and Group B for Activities 8 and 9  Invite a person from each group to show their calculations to the rest of the class. |  | Complete activity 8:  Group A: Solve parts 1 and 2  Group B: Solve parts 3 and 4  Complete activity 9:  Group A: Solve parts 3 and 4  Group B: Solve parts 1 and 2 | E1 LO1 Activity 8  E1 LO1 Activity 9 |
| Expressing numbers as percentages | Explain the concept of percentages to the learners and build this discussion around the situations identified by the learners earlier.  Explain through an example why percentages are important for making comparisons. | 16 | In small groups, ask learners to identify the situations they are familiar with where percentages are used. Present their findings to the rest of the class. |  |
| Expressing numbers as percentages | Show how a percentage can be converted into a fraction and vice versa. |  |  |  |
| Divide the class into two groups: Group A and Group B for Activities 10 and 11  Invite a person from each group to show their calculations to the rest of the class. |  | Complete activity 10:  Group A: Solve parts 1 and 2  Group B: Solve parts 3 and 4  Complete activity 11:  Group A: Solve parts 3 and 4  Group B: Solve parts 1 and 2 | E1 LO1 Activity 10  E1 LO1 Activity 11 |
| Rules applying to percentages | Discuss the rules applying to percentages to the class. | 17 | Learners to complete Activity 12 in the class and discuss any queries they may have. | E1 LO1 Activity 12 |
|  |  | Learner should complete the formative assessment (Activities 13 and 14) individually not necessarily in the class | E1 LO1 Activity 13  E1 LO1 Activity 14 |
| Using ratios and proportions | Introduce ratios and proportions through general examples (sharing a pizza etc.) and other examples identified by learners. | 18 | In small groups, ask learners to identify the situations they are familiar with where ratios and proportions are used. Present their findings to the rest of the class. |  |
| Rules of ratios | Show slide 19 and discuss the rules that apply to ratios by using examples from the study guide. | 19 |  |  |
| Dividing a number using a given ratio | Use slide 20 and the example in the study guide to illustrate how an amount or a value can be divided in a certain ratio. | 20-21 | Learners complete activities 15 and 16 individually in the class and discuss any queries they may have. | E1 LO1 Activity 15  E1 LO1 Activity 16 |
|  |  | Learner should complete the formative assessment (activities 17 and 18) individually not necessarily in the class. | E1 LO1 Activity 17  E1 LO1 Activity 18 |
| Using ratios and proportions | Discuss the rules applying to proportions by using examples. | 22 | Learners complete part parts 1 and 2 of activity 19 and part 3 of activity 20 in the class. | E1 LO1 Activity 19  E1 LO1 Activity 20 |

### SESSION 3: Performing simple financial calculations (4-6 hours)

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| **Topic** | **Tutor Activity** | **Slides** | **Learner Activity** | **Formative Assessment** |
| Basic numerical calculations in business | **1.3 Perform simple financial calculations to obtain values for taking business decisions**  Use ‘4UIQM E1 Tutor Presentation’ PowerPoint  Make a list of all the situations identified by the learners during their discussion.  Now show them slide 24 and see if there were any gaps. Tell the learners that though there can be many more situations, the scope of this syllabus is restricted to the calculations listed in the slide | 23-24 | Ask learners to identify various situations in a business where numerical calculations are required. |  |
| Simple and compound interest | Ask learners whether they have a bank account or have ever taken a loan. Ask them what are they charged for using the money? How often does it become due? Do they pay anything on the charge that has become due? Based on the answers, explain the concept of interest.  Discuss the various parties involved and also bring out the difference between simple and compound interest.  Ask learners to identify any other situations, which may involve interest. Refer to making investments. | 25 | Learners should be involved in an active discussion to explain the concept. |  |
| Simple interest | Show the learners the formula for calculating simple interest emphasising on the individual items.  Next using Case study 1 from the study guide illustrate to the class how to calculate:   * Simple interest * Amount due at the end of duration of loan * Principal amount * Duration of loan | 26 | Learners complete activities 21, 22 and 23 individually in the class and discuss any queries they may have. | E1 LO1 Activity 21  E1 LO1 Activity 22  E1 LO1 Activity 23 |
| Compound interest | Show the learners the formula for calculating compound interest emphasising on the individual items.  Explain how it is different from simple interest by using an example (refer style guide for an example).  Next using Case study 1 illustrate to the class how to calculate:   * Annual compound interest * Amount due at the end of duration of loan when it is compounded annually use Case study | 27 |  |  |
| Compound interest | Ask the learner what they think will happen if the interest is compounded semi-annually? Ask them whether they think they will be able to use the same formula for the compound interest. |  | Learners should actively participate in the discussions. |  |
| At the end of the discussion summarise what needs to be done and illustrate this through Case study 2 from the study guide. |  | Learners complete activity 24 individually in the class and discuss any queries they may have. | E1 LO1 Activity 24 |
| Discounted or present value of money | Initiate a discussion about time value of money by asking:  whether $100 today will have the same purchasing power  how to do financial planning for the future  Within the backdrop of the discussion explain:   * The concept of time value of money and why it is important * Present or discounted value of money   Show the learners the formula for calculating present value emphasising on the individual elements.  Illustrate through Case study 3:   * Calculation of present value * Evaluation of options based on present value | 28 | Learners should actively participate in the discussions.  Learners should complete parts (a) and (c) of Activity 25 in the class and discuss any queries they may have. Parts (b) and (d) is for their own practice. | E1 LO1 Activity 25 |
| Depreciation of an asset | Introduce the concept of depreciation to the learners by asking them whether they think that the mobile phone that they have or the car they have (or any other asset) will continue to have the same value at which these were bought? If no then what would be the reasons?  Next explain why it is important to calculate the depreciation of an asset.  Tell the learners that there are various methods through which depreciation can be calculated. The focus of the syllabus is only on two such methods. | 29 | Learners should actively participate in the discussions. |  |
| Straight-line method of depreciation | Briefly describe straight-line depreciation.  Show the learners the formula for calculating annual depreciation using this method. | 30 |  |  |
| Illustrate calculation of:   * straight line depreciation and value of asset after a specific period - Example 1 * Number of years within which the asset will have no value - Example 2 * Rate of depreciation - Example 3 |  | Learners complete activity 26 individually in the class and discuss any queries they may have. | E1 LO1 Activity 26 |
| Reducing balance method of depreciation | Briefly describe reducing balance depreciation.  Show the learners the formula for calculating annual depreciation using this method. | 31 |  |  |
| Illustrate calculation of:   * Reducing balance depreciation and value of asset after a specific period –Example 4   Show the formula for calculating rate of depreciation |  | Learners should complete activity 27 in the class and discuss any queries they may have. | E1 LO1 Activity 27 |
|  |  | Learner should complete the formative assessment (Activity 28) individually not necessarily in the class. | E1 LO1 Activity 28 |
| Other business calculations | To encourage participation hint at:   * salaries and wages * discounts * foreign rate conversions * taxation   Show them slide 60 | 32 | Within small groups ask learners to list down other activities within a business that require numerical calculations but have not yet been covered. |  |
| Wages and salaries | Illustrate calculations through example 1 and 2. | 33 | Learners complete activity 29 individually in the class and discuss any queries they may have. | E1 LO1 Activity 29 |
| Discounts | Show the formula for calculation of discounts  Illustrate calculation through example in the study guide. | 34 | Learners complete activity 30 individually in the class and discuss any queries they may have. | E1 LO1 Activity 30 |
| Foreign exchange conversions | Need for foreign exchange conversions.  Illustrate method of converting one currency into another through:   * Example 1 * Example 2 | 35 | Learners complete activity 31 individually in the class and discuss any queries they may have. | E1 LO1 Activity 31 |
| Review of session and learning outcomes | Discuss the key points covered in the chapter and ask learners if they have any queries. | 36 |  |  |