REPUBLIC OF KENYA

NATIONAL OCCUPATIONAL STANDARD

FOR

ANALYTICAL CHEMISTRY TECHNICIAN

KNQF LEVEL 6

OCCUPATION STANDARD ISCED CODE: 0531 554A

APPLY RESEARCH METHODS

ISCED UNIT CODE: 0542 551 10A

TVET CDACC UNIT CODE: ASC/OS/ACHEM/CC/06/6/MA

UNIT DESCRIPTION

This unit covers the competencies required in applying research methods. It involves developing research project proposal, carrying out sampling and data collection, applying methods of data analysis concepts, carrying out presentation and interpretation of data, and perform project report writing and presentation.

ELEMENT AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up laboratory function	**PERFORMANCE CRITERIA** These are assessable statements which specify the required level of performance for each of the elements. ***(Bold and italicized terms are elaborated in the Range)***
1. Develop research project proposal	1.1 ***Research design*** is developed as per institutional guidelines. 1.2 Literature is gathered as per institutional guidelines. 1.3 Literature review is carried out as per institutional guidelines. 1.4 Research proposal is developed as per institutional guidelines.
2. Carry out sampling and data collection	2.1 Sampling plan is developed as per institutional guidelines. 2.2 ***Sources of data*** are identified as per institutional guidelines.

	2.3 Type of data is identified as per institutional guidelines.
3. Apply methods of data analysis concepts	3.1 ***Measures of central tendency*** are calculated as per statistical rules. 3.2 Measures of dispersion are calculated as per statistical rules. 3.3 Probability is calculated as per statistical rules. 3.4 Correlation is calculated as per statistical rules.
4. Carry out presentation and interpretation of data	4.1 Tabulation of data is carried out as per statistical procedures. 4.2 Classification of data is performed as per statistical procedures. 4.3 ***Statistical data presentation*** is performed as per statistical procedures. 4.4 Interpretation of data is carried out as per statistical procedures.
5. Perform project report writing and presentation	5.1 Findings are documented as per report writing format 5.2 Conclusions are drawn as per report writing format 5.3 Recommendations are made as per report writing format 5.4 Project report is presented as per institutional guidelines.

RANGE

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

Variable	**Range**
1. Research design	• Study survey • Experimental • Quantitative survey • Qualitative survey
2. Source of data	• Primary sources • Second sources
3. Measure of central tendency	• Mean • Mode • Median
4. Statistical data presentation	• Tabulation • Graphical • Pie charts

REQUIRED SKILLS AND KNOWLEDGE

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

Required Skills

The individual needs to demonstrate the following skills:

- Communication skills
- Computer skills
- Problem solving

- Record keeping
- Team work

Required Knowledge

The individual needs to demonstrate knowledge of:

- Preparation of solution
- Preparation of samples
- Safety precaution
- Mathematics

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	Assessment requires evidence that the candidate: 1.1 Developed research design as per institutional guidelines. 1.2 Carried out literature review as per institutional guidelines. 1.3 Developed research proposal as per institutional guidelines. 1.4 Developed sampling plan as per institutional guidelines.

	1.5 Identified sources of data as per institutional guidelines. 1.6 Identified type of data as per institutional guidelines. 1.7 Calculated measures of central tendency as per statistical rules. 1.8 Calculated measures of dispersion as per statistical rules. 1.9 Calculated correlation as per statistical rules. 1.10 Classified data as per statistical procedures. 1.11 Presented statistical data as per statistical procedures. 1.12 Interpreted data as per statistical procedures. 1.13 Documented findings as per report writing format 1.14 Drew conclusions as per report writing format 1.15 Made recommendations as per report writing format 1.16 Presented project report as per institutional guidelines.
2. Resource Implications	The following resources should be provided: 2.1 Access to relevant workplace 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 test

	3.2 Written test 3.3 Case studies 3.4 Project report
4. Context of Assessment	Competency may be assessed: 4.1 Workplace 4.2 Simulated laboratory environment
5. Guidance information for assessment	5.1 Holistic assessment with other units relevant to the industry sector, laboratory and job role is recommended.