****

**REPUBLIC OF KENYA**

**COMPETENCY BASED CURRICULUM**

**FOR**

**SWEET POTATO PROCESSING**

**LEVEL 4**

****

TVET CDACC

P.O. BOX 15745-00100

NAIROBI

First published 2020

©2020, TVET CDACC

All rights reserved. No part of this curriculum may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods without the prior written permission of the TVET CDACC, except in the case of brief quotations embodied in critical reviews and certain other non-commercial uses permitted by copyright law. For permission requests, write to the Council Secretary/CEO, at the address below:

**Council Secretary/CEO**

**TVET Curriculum Development, Assessment and Certification Council**

**P.O. Box 15745–00100**

**Nairobi, Kenya**

**Email:** **info@tvetcdacc.go.ke**

# FOREWORD

The provision of quality education and training is fundamental to the Government’s overall strategy for social economic development. Quality education and training will contribute to achievement of Kenya’s development blueprint and sustainable development goals.

Reforms in the education sector are necessary for the achievement of Kenya’s Vision 2030 and meeting the provisions of the Constitution of Kenya 2010. The education sector had to be aligned to the Constitution and this resulted in the formulation of the Policy Framework for Reforming Education and Training. A key feature of this policy is the radical change in the design and delivery of TVET training. This policy document requires that training in TVET be competency based, curriculum development be industry led, certification be based on demonstration of competence and mode of delivery allows for multiple entry and exit in TVET Programmes.

These reforms demand that Industry takes a leading role in curriculum development to ensure the curriculum addresses its competence needs. It is against this background that this curriculum has been developed.

It is my conviction that this curriculum will play a great role towards development of competent human resource for Sweet Potato sector’s growth and development.

**PRINCIPAL SECRETARY, VOCATIONAL AND TECHNICAL TRAINING**

**MINISTRY OF EDUCATION**

# PREFACE

Kenya’s Vision 2030 aims to transform the country into a newly industrializing, “middle-income country providing a high-quality life to all its citizens by the year 2030”. Kenya intends to create a globally competitive and adaptive human resource base to meet the requirements of a rapidly industrializing economy through life-long education and training. TVET has a responsibility of facilitating the process of inculcating knowledge, skills and attitudes necessary for catapulting the nation to a globally competitive country, hence the paradigm shift to embrace Competency Based Education and Training (CBET).

The Technical and Vocational Education and Training Act No. 29 of 2013 on Reforming Education and Training in Kenya, emphasized the need to reform curriculum development, assessment and certification. This called for a shift to CBET to address the mismatch between skills acquired through training and skills needed by industry as well as increase the global competitiveness of Kenyan labour force.

TVET Curriculum Development, Assessment and Certification Council (TVET CDACC) in conjunction with Sweet Potato Sector Skills Advisory Committee (SSAC) have developed this curriculum.

This curriculum has been developed following the CBET framework policy; the CBETA Standards and guidelines provided by the TVET Authority and the Kenya National Qualification framework designed by the Kenya National Qualification Authority.

This curriculum is designed and organized with an outline of learning outcomes; suggested delivery methods, training/learning resources and methods of assessing the trainee’s achievement. The curriculum is competency-based and allows multiple entry and exit to the course.

I am grateful to the Council Members, Council Secretariat, Sweet Potato SSAC, expert workers and all those who participated in the development of this curriculum.

**CHAIRPERSON, TVET CDACC**

# ACKNOWLEDGMENT

This curriculum has been designed for competency-based training and has independent units of learning that allow the trainee flexibility in entry and exit. In developing the curriculum, significant involvement and support was received from various organizations.

I recognize with appreciation the role of the Sweet Potato Sector Skills Advisory Committee (SSAC) in ensuring that competencies required by the industry are addressed in the curriculum. I also thank all stakeholders in Sweet Potato sector for their valuable input and all those who participated in the process of developing this curriculum.

I am convinced that this curriculum will go a long way in ensuring that workers in Sweet Potato Processing sector acquire the competencies that will enable them to perform their work more efficiently and effectively.

**COUNCIL SECRETARY/CEO**

**TVET CDACC**

**TABLE OF CONTENTS**

[FOREWORD ii](#_Toc77664904)

[PREFACE iii](#_Toc77664905)

[ACKNOWLEDGMENT iv](#_Toc77664906)

[ACRONYMS AND ABBREVIATIONS vi](#_Toc77664907)

[KEY TO UNIT CODE vii](#_Toc77664908)

[COURSE OVERVIEW viii](#_Toc77664909)

[BASIC UNITS OF LEARNING 1](#_Toc77664910)

[COMMUNICATION SKILLS 2](#_Toc77664911)

[NUMERACY SKILLS 5](#_Toc77664912)

[DIGITAL LITERACY 9](#_Toc77664913)

[ENTREPRENEURIAL SKILLS 11](#_Toc77664914)

[EMPLOYABILITY SKILLS 15](#_Toc77664915)

[ENVIRONMENTAL LITERACY 18](#_Toc77664916)

[OCCUPATIONAL SAFETY AND HEALTH PRACTICES 21](#_Toc77664917)

[CORE UNITS OF LEARNING 24](#_Toc77664918)

[SWEET POTATO PUREE 25](#_Toc77664919)

[SWEET POTATO FLOUR 29](#_Toc77664920)

[SWEET POTATO CRISPS 31](#_Toc77664921)

[DRY SWEET POTATO CHIPS 34](#_Toc77664922)

[FOOD SAFETY AND QUALITY ASSURANCE 36](#_Toc77664923)

# ACRONYMS AND ABBREVIATIONS

A Control Version

AGR Agriculture and Rural Development

BC Basic Competency

CBET Competency-Based Education and Training

CDACC Curriculum Development, Assessment and Certification Council

CR Core Competency

CU Curriculum

ICT Information communication technology

NEMA National Environment Management Authority

OSH Occupational Safety and Health

PPEs Personal Protective Equipment

SOPs Standard Operating Procedures

SPP Sweet Potato Processing

TVET Technical and Vocational Education and Training

# KEY TO UNIT CODE

 AGR/CU/SPP/BC/01/4/A

Industry or sector

Curriculum

Occupational area

Type of competency

Competency number

Competency level

Control version

# COURSE OVERVIEW

Sweet Potato Processing Certificate level 4 qualification consists of units of learning that a person must achieve to produce sweet potato puree, sweet potato flour, sweet potato crisps and to produce dry sweet potato chips. It also enables an individual to manage food safety and quality assurance.

The units of learning leading to Sweet Potato Processing certificate level 4 qualification include the following basic and core:

**Basic Units of Learning**

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit Code** | **Unit Title** | **Duration in Hours** | **Credit factor** |
| AGR/CU/SPP/BC/01/4/A | Communication skills | 20 | 2 |
| AGR/CU/SPP/BC/02/4/A | Numeracy skills  | 25 | 2.5 |
| AGR/CU/SPP/BC/03/4/A | Digital literacy | 35 | 3.5 |
| AGR/CU/SPP/BC/04/4/A | Entrepreneurial skills | 60 | 6 |
| AGR/CU/SPP/BC/05/4/A | Employability skills | 30 | 3 |
| AGR/CU/SPP/BC/06/4/A | Environmental literacy | 20 | 2 |
| AGR/CU/SPP/BC/07/4/A | Occupational safety and health practices | 20 | 2 |
| **Total** | **210** | **21** |

**Core** **Units of Learning**

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit Code** | **Unit Title** | **Duration in Hours** | **Credit factor** |
| AGR/CU/SPP/CR/01/4/A | Sweet potato puree | 100 | 10 |
| AGR/CU/SPP/CR/02/4/A | Sweet potato flour | 80 | 8 |
| AGR/CU/SPP/CR/03/4/A | Sweet potato crisps | 80 | 8 |
| AGR/CU/SPP/CR/04/4/A | Dry Sweet potato chips | 70 | 7 |
| AGR/CU/SPP/CR/05/4/A | Food safety and Quality Assurance | 60 | 6 |
|  | Industrial attachment | 300 | 30 |
| **Total** | **690** | **69** |
| **Grand total** | **900** | **90** |

The total duration of the course for an average trainee is 900 hours including 300 hours (12 weeks) of field attachment

**Entry Requirements**

An individual entering this course should have any of the following minimum requirements:

1. Kenya Certificate of Secondary Education (KCSE) mean grade E

**Or**

1. National skills certificate in Sweet Potato Processing Level 3

**Or**

1. Equivalent qualifications as determined by Kenya National Qualifications Authority (KNQA)

**Field attachment**

An individual enrolled in this course will undergo a field attachment for a period of 12 weeks in a Sweet potato processing plant.

**Assessment**

The course will be assessed at two levels:

1. **Internal assessment**: conducted continuously by the trainer (internal assessor) who is monitored by an accredited internal verifier
2. **External assessment:** conducted by an accredited external assessor who is monitored by an accredited external verifier

The assessors and verifiers are accredited by TVET CDACC which also coordinates external assessment.

**Certification**

An individual will be awarded a Certificate of Competency on demonstration of competence in a unit of competency. To be awarded Certificate in Sweet Potato Processing Level 4, an individual must demonstrate competence in all the units of competency.

These certificates will be awarded by TVET CDACC in conjunction with the training provider.

# BASIC UNITS OF LEARNING

# COMMUNICATION SKILLS

**UNIT CODE:** AGR/CU/SPP/BC/01/4/A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Communication Skills

**Duration of Unit:** 20 Hours

**Unit Description**

This unit covers the competencies required demonstrate communication skills. It involves obtaining and conveying workplace information, completing relevant work-related documents, communicating information about workplace processes, leading workplace discussion and communicating workplace issues.

**Summary of Learning Outcomes**

1. Obtain and convey workplace information
2. Complete relevant work-related documents
3. Communicate information about workplace processes
4. Lead workplace discussions
5. Identify and communicate issues arising in the workplace

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Obtain and convey workplace information
 | * Communication process
* Modes of communication
* Medium of communication
* Effective communication
* Barriers to communication
* Flow of communication
* Sources of information
* Types of questions
* Organizational policies
* Workplace etiquette
* Ethical work practices in handling communication
 | * Interview
* Third party reports
 |
| 1. Complete relevant work-related documents
 | * Types and purposes of workplace documents and forms
* Methods used in filling forms and documents
* Recording workplace data
* Process of distributing workplace forms and documents
* Report writing
* Types of workplace reports
 | * Interview
* Third party reports
 |
| 1. Communicate information about workplace processes
 | * Communication process
* Modes of communication
* Medium of communication
* Effective communication
* Barriers to communication
* Flow of communication
* Sources of information
* Organizational policies
* Organization requirements for written and electronic communication methods
* Report writing
* Effective questioning techniques (clarifying and probing)
* Workplace etiquette
* Ethical work practices in handling communication
 | * Interview
* Portfolio
 |
| 1. Lead workplace discussion
 | * Methods of discussion e.g.
	+ Coordination meetings
	+ Toolbox discussion
	+ Peer-to-peer discussion
* Solicitation of response
 | * Interview
* Third party reports
 |
| 1. Identify and communicate issues arising in the workplace
 | * Identification of problems and issues
* Organizing information on problems and issues
* Relating problems and issues
* Communication barriers affecting workplace discussions
 | * Interview
* Portfolio
 |

**Suggested Methods of Instructions**

* Direct instruction
* Demonstration
* Practice assignment
* Discussion
* Role play
* Brainstorming

**Recommended Resources**

* Desktop computers/laptops
* Internet connection
* Projectors
* Telephone
* Report writing templates

# NUMERACY SKILLS

**UNIT CODE:** AGR/CU/SPP/BC/02/4/A

**Relationship to Occupational Standards:**

This unit addresses the Unit of Competency: Demonstrate Numeracy Skills

**Duration of Unit:** 25hours

**Unit Description**

This unit covers the competencies required to demonstrate numeracy skills. It involves identifying and using whole numbers and simple fractions, decimals and percentages for work, identifying, measuring and estimating familiar quantities for work, reading and using familiar maps, plans and diagrams for work, identifying and describing common 2D and some 3D shapes for work, constructing simple tables and graphs for work using familiar data and identifying and interpreting information in familiar tables, graphs and charts for work.

**Summary of Learning Outcomes**

1. Identify and use whole numbers and simple fractions, decimals and percentages for work
2. Identify, measure and estimate familiar quantities for work
3. Read and use familiar maps, plans and diagrams for work
4. Identify and describe common 2D and some 3D shapes for work
5. Construct simple tables and graphs for work using familiar data
6. Identify and interpret information in familiar tables, graphs and charts for work

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Identify and use whole numbers and simple fractions, decimals and percentages for work
 | * Whole numbers
* Simple fractions
* Decimals
* Percentages
* Sizes
* Problem solving methods
* Calculations using the 4 operations
* Recording and communicating numerical information
 | * Written
* Practice assignments

  |
| 2. Identify, measure and estimate familiar quantities for work | * Measurement information
* Units of measurement
* Estimate familiar and simple amounts
* Selection of appropriate measuring equipment
* Calculate using familiar units of measurement
* Check measurements and results against estimates
* Using informal and some formal mathematical and general language
* Record or report results
 | * Written
* Practice assignments
 |
| 3. Read and use familiar maps, plans and diagrams for work | * Maps, plans and diagrams
* Locate items and places in familiar maps, plans and diagrams
* Recognize common symbols and keys in familiar maps, plans and diagrams
* Direction and location of objects, or route or places
* Use of informal and some formal oral mathematical language and symbols
 | * Practical test
* Written
 |
| 4. Identify and describe common 2D and some 3D shapes for work | * Common 2D shapes and 3D shapes
* Classification of common 2D shapes and designs
* Description of Use informal and some formal language to describe common two-dimensional shapes and some common three-dimensional shapes
* Construction of common 2D shapes
* Match common 3D shapes to their 2D sketches or nets
 | * Written
* Practical test
 |
| 5. Construct simple tables and graphs for work using familiar data | * Types of graphs
* Determination of data to be collected
* Selection of data collection method
* Collection of data
* Determination of variables from the data collected
* Order and collate data
* Construct a table and enter data
* Construct a graph using data from table
* Check results
* Report or discuss graph information related to work using informal and some formal mathematical and general language
 | * Written
* Practical test
 |
| 6. Identify and interpret information in familiar tables, graphs and charts for work | * Tables construction and labeling
* i.e. title, headings, rows and columns
* Interpreting information and data in simple tables
* Relaying information of relevant workplace tasks on/in a table
* Identify familiar graphs and charts in familiar texts and contexts
* Locate title, labels, axes, scale and key from familiar graphs and charts
* Identify and interpret information and data in familiar graphs and charts
* Relate information to relevant workplace tasks
 | * Written
* Practical test
 |

**Suggested Methods of Instructions**

* Instructor led facilitation of theory
* Practical demonstration of tasks by trainer
* Practice by trainees/ role play
* Discussion
* Observations and comments and corrections by trainers

**Recommended Resources**

* Computers
* Stationery
* Charts
* Video clips
* Audio tapes
* LCD projectors
* Standard operating and/or other workplace procedures manuals
* Specific job procedures manuals
* Projectors
* Writing boards
* Mathematical tables

# DIGITAL LITERACY

**UNIT CODE:** AGR/CU/SPP/BC/03/4/A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Digital Literacy

**Duration of Unit:** 35 hours

**Unit Description**

This unit covers the competencies required to demonstrate digital literacy in a working environment. It entails identifying computer software and hardware, applying security measures to data, hardware, software, applying computer software in solving task sand applying internet and email in communication at workplace.

**Summary of Learning Outcomes**

1. Identify computer software and hardware
2. Apply security measures to data, hardware and software
3. Apply computer software in solving tasks
4. Apply internet and email in communication at workplace

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Identify computer hardware and software
 | * Meaning of a computer
* Functions of a computer
* Components of a computer
* Classification of computers
 | * Written tests
* Oral
* Observation
 |
| 1. Apply security measures to data, hardware and software
 | * Data security and control
* Security threats and control measures
* Types of computer crimes
* Detection and protection against computer crimes
 | * Written tests
* Oral presentation
* Observation
* Projects
 |
| 1. Apply computer software in solving tasks
 | * Operating system
* Word processing
* Spread sheets
* Data base
 | * Oral questioning
* Observation
* Project
 |
| 1. Apply internet and email in communication at workplace
 | * Computer networks
* Uses of internet
* Electronic mail (e-mail) concept
 | * Oral questioning
* Observation
* Oral presentation
* Written report
 |

**Suggested Methods of Instructions**

* Instructor led facilitation of theory
* Demonstration by trainer
* Practical assignment
* Viewing of related videos
* Project
* Group discussions

**Recommended Resources**

* Desktop computers
* Laptop computers
* Other digital devices
* Printers
* Storage devices
* Internet access
* Computer software

# ENTREPRENEURIAL SKILLS

**UNIT CODE:** AGR/CU/SPP/BC/04/4/A

**Relationship to occupational standards**

This unit addresses the Unit of Competency: Demonstrate Entrepreneurial Skills

**Duration of unit:** 60 hours

**Unit description**

This unit covers the competencies required for creating and maintaining small scale business, establishing small business customer base, managing and growing a micro/small-scale business.

**Summary of Learning Outcomes**

1. Create and maintain small scale business
2. Establish small scale business customer base
3. Manage small scale business
4. Grow/expand small scale business

 **Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Create and maintain small scale business
 | * Starting a small business
* Legal regulatory requirements in starting a small business
* SWOT/ PESTEL analysis
* Conducting market/industry survey
* Generation and evaluation of business ideas
* Matching competencies with business opportunities
* Forms of business ownership
* Location of a small business
* Legal and regulatory requirement
* Resources required to start a small business
* Common terminologies in entrepreneurship
* Entrepreneurship in national development
* Self-employment
* Formal and informal employment
* Entrepreneurial culture
* Myths associated with entrepreneurship
* Types, characteristics, qualities & role of entrepreneurs
* History, development and importance of entrepreneurship
* Theories of entrepreneurship
* Quality assurance for small businesses
* Policies and procedures on occupational safety and health and environmental concerns
 | * Individual/group assignments
* projects
* Written
* Oral
 |
| 1. Establish small scale business customer base
 | * Good staff/workers and customer relations
* Marketing strategy
* Identifying and maintain new customers and markets
* Product/ service promotions
* Products / services diversification
* SWOT / PESTEL analysis
* Conducting a business survey
* Generating Business ideas
* Business opportunities
 | * Individual/group assignments
* projects
* Written
* Oral
 |
| 1. Manage small scale business
 | * Organization of a small business
* Small business’ business plan
* Marketing for small businesses
* Managing finances for small business
* Production/ operation process for goods/services
* Small business records management
* Book keeping and auditing for small businesses
* Business support services
* Small business resources mobilization and utilization
* Basic business social responsibility
* Management of small business
* Word processing concepts in small business management
* Computer application software
* Monitoring and controlling business operations
 | * Oral
* Individual/group assignments
* projects
* Written
 |
| 1. Grow/expand small scale business
 | * Methods of growing small business
* Resources for growing small business
* Small business growth plan
* Computer software in business development
* ICT and business growth
 | * Individual/group assignments
* projects
* Written
 |

**Suggested Methods of Instructions**

* Instructor led facilitation of theory
* Demonstration by trainer
* Practice by trainee
* Role play
* Case study

**Recommended Resources**

* Case studies for small businesses
* Business plan templates
* Lap top/ desk top computer
* Internet
* Telephone
* Writing materials

# EMPLOYABILITY SKILLS

**UNIT CODE:** AGR/CU/SPP/BC/05/4/A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Employability Skills

**Duration of Unit:** 30 hours

**Unit Description**

This unit covers competencies required to demonstrate employability skills. It involves conducting self-management, demonstrating critical safe work habits, demonstrating workplace learning and workplace ethics.

**Summary of Learning Outcomes**

1. Conduct self-management
2. Demonstrate critical safe work habits
3. Demonstrate workplace learning
4. Demonstrate workplace ethics

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Conduct self-management
 | * Self-awareness
* Formulating personal vision, mission and goals
* Strategies for overcoming life challenges
* Emotional intelligence
* Assertiveness
* Expressing personal thoughts, feelings and beliefs
* Developing and maintaining high self-esteem
* Developing and maintaining positive self-image
* Articulating ideas and aspirations
* Accountability and responsibility
* Good work habits
* Self-awareness
* Self-development
* Financial literacy
* Healthy lifestyle practices
 | * Written tests
* Oral questioning
* Portfolio of evidence
* Third party report
 |
| 1. Demonstrate critical safe work habits
 | * Stress and stress management
* Punctuality and time consciousness
* Interpersonal communication
* Sharing information
* Leisure
* Integratingpersonal objectives into organizational objectives
* Resources utilization
* Setting work priorities
* HIV and AIDS
* Drug and substance abuse
* Handling emerging issues
 | * Written tests
* Oral questioning
* Portfolio of evidence
* Third party report
 |
| 1. Demonstrate workplace learning
 | * Personal training needs identification and assessment
* Managing own learning
* Contributing to the learning community at the workplace
* Cultural aspects of work
* Variety of learning context
* Application of learning
* Safe use of technology
* Identifying opportunities
* Workplace innovation
* Performance improvement
* Handling emerging issues
* Future trends and concerns in learning
 | * Written tests
* Oral questioning
* Portfolio of evidence
* Third party report
 |
| 1. Demonstrate workplace ethics
 | * Meaning of ethics
* Ethical perspectives
* Principles of ethics
* Values and beliefs
* Ethical standards
* Organization code of ethics
* Common ethical dilemmas
* Organization culture
* Corruption, bribery and conflict of interest
* Privacy and data protection
* Diversity, harassment and mutual respect
* Financial responsibility/accountability
* Etiquette
* Personal and professional integrity
* Commitment to jurisdictional laws
* Emerging issues in ethics
 | * Written tests
* Oral questioning
* Portfolio of evidence
* Third party report
 |

**Suggested Methods of Instructions**

* Simulation/Role play
* Group Discussion
* Presentations
* Q&A
* Case studies
* Assignments

**Recommended Resources**

* Computers
* Stationery
* Charts
* Video clips
* Audio tapes
* Radio sets
* TV sets
* LCD projectors

# ENVIRONMENTAL LITERACY

**UNIT CODE:** AGR/CU/SPP/BC/06/4/A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Environmental Literacy

**Duration of Unit:** 20hours

**Unit Description**

This unit specifies the competencies required to demonstrate environmental literacy. It involves controlling environmental hazard, controlling environmental pollution, demonstrating sustainable resource use and evaluating current practices in relation to resource usage.

**Summary of Learning Outcomes**

1. Control environmental hazard
2. Control environmental pollution
3. Demonstrate sustainable use of resources
4. Evaluate current practices in relation to resource usage

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Control environmental hazard
 | * Purposes and content of Environmental Management and Coordination Act 1999
* Purposes and content of Solid Waste Act
* Storage methods for environmentally hazardous materials
* Disposal methods of hazardous wastes
* Types and uses of PPE in line with environmental regulations
* Occupational Safety and Health Standards (OSHS)
 | * Written tests
* Oral questions
* Observation of work procedures
 |
| 1. Control environmental Pollution
 | * Types of pollution
* Environmental pollution control measures
* Types of solid wastes
* Procedures for solid waste management
* Different types of noise pollution
* Methods for minimizing noise pollution
 | * Written tests
* Oral questions
* Observation of work procedures
* Role play
 |
| 1. Demonstrate sustainable resource use
 | * Types of resources
* Techniques in measuring current usage of resources
* Calculating current usage of resources
* Methods for minimizing wastage
* Waste management procedures
* Principles of 3Rs (Reduce, Reuse, Recycle)
* Methods for economizing or reducing resource consumption
 | * Written tests
* Oral questions
* Observation of work procedures
 |
| 1. Evaluate current practices in relation to resource usage
 | * Collection of information on environmental and resource efficiency systems and procedures,
* Measurement and recording of current resource usage
* Analysis and recording of current purchasing strategies.
* Analysis of current work processes to access information and data
* Identification of areas for improvement
 | * Written tests
* Oral questions
* Observation of work procedures
 |
| 1. Identify Environmental legislations/conventions for environmental concerns
 | * Environmental issues/concerns
* Environmental legislations /conventions and local ordinances
* Industrial standard /environmental practices
* International Environmental Protocols (Montreal, Kyoto)
* Features of an environmental strategy
 | * Written tests
* Oral questions
* Observation of work procedures
 |

**Suggested Methods of Instructions**

* Instructor led facilitation of theory
* Practical demonstration of tasks by trainer
* Practice by trainees/ role play
* Discussion
* Observations and comments and corrections by trainers

**Recommended Resources**

* Computers
* Stationery
* Charts
* Video clips
* Audio tapes
* Radio sets
* TV sets
* LCD projectors
* Standard operating and/or other workplace procedures manuals
* Specific job procedures manuals
* Machine/equipment manufacturer’s specifications and instructions
* Personal Protective Equipment (PPE)

# OCCUPATIONAL SAFETY AND HEALTH PRACTICES

**UNIT CODE:** AGR/CU/SPP/BC/07/4/A

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Demonstrate Occupational Safety and Health Practices

**Duration of Unit:** 20 hours

**Unit Description**

This unit specifies the competencies required to practice safety and health and comply with OSH requirements relevant to work. It involves adhering to workplace procedures for hazards and risk prevention and participating in arrangements for workplace safety and health maintenance.

**Summary of Learning Outcomes**

1. Adhere to workplace procedures for hazards and risk prevention
2. Participate in arrangements for workplace safety and health maintenance

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment****Methods** |
| 1. Adhere to workplace procedures for hazards and risk prevention
 | * Arrangement of work area and items in accordance with Company housekeeping procedures
* Adherence to work standards and procedures
* Application of preventive and control measures, including use of safety gears/PPE
* Study and apply standards and procedures for incidents and emergencies.
 | * Oral questions
* Written tests
* Portfolio of evidence
* Third party report
 |
| 1. Participate in arrangements for workplace safety and health maintenance
 | * Participating in orientations on OSH requirements/regulations of tasks
* Providing feedback on health, safety, and security concerns to appropriate personnel as required in a sufficiently detailed manner
* Practice workplace procedures for reporting hazards, incidents, injuries and sickness
* OSH requirements/ regulations and workplace safety and hazard control procedures are reviewed, and compliance reported to appropriate personnel
* Identification of needed OSH-related trainings are proposed to appropriate personnel
 | * Oral questions
* Written tests
* Portfolio of evidence
* Third party report
 |

**Suggested Methods of Instructions**

* Assigments
* Discussion
* Q&A
* Role play
* Viewing of related videos

**Recommended Resources**

* Computers
* Stationery
* Charts
* Video clips
* Audio tapes
* Radio sets
* TV sets
* LCD projectors
* Standard operating and/or other workplace procedures manuals
* Specific job procedures manuals
* Machine/equipment manufacturer’s specifications and instructions
* Personal Protective Equipment (PPE) e.g.
* Mask
* Face mask/shield
* Safety bootsn
* Safety harness
* Arm/Hand guard, gloves
* Eye protection (goggles, shield)
* Hearing protection (ear muffs, ear plugs)
* Hair Net/cap/bonnet
* Hard hat
* Face protection (mask, shield)
* Apron/Gown/coverall/jump suit
* Anti-static suits
* High-visibility reflective vest

# CORE UNITS OF LEARNING

# SWEET POTATO PUREE

**UNIT CODE:** AGR/CU/SPP/CR/01/4/A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Produce sweet potato puree

**Duration of Unit:** 100 Hours

**Unit Description**

This unit specifies the competencies required to produce sweet potato puree. It involves sorting and grading sweet potato roots, washing sweet potato roots, steaming and cooling sweet potato roots and pureeing steamed sweet potato roots. It also involves packaging sweet potato puree and storing sweet potato puree.

**Summary of Learning Outcomes**

1. Sort and grade sweet potato roots
2. Wash sweet potato roots
3. Steam and cool sweet roots
4. Puree steamed sweet potato roots
5. Package sweet potato puree
6. Store sweet potato puree

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Sort and grade sweet potato roots
 | * Definition of sorting and grading.
* Significance of sorting and grading
* Sorting and grading methods
* Root quality attributes-flesh color, shape, size, skin quality
* Storage of sweet potatoes-Temperature, relative humidity, ventilation and light regulation.
* Tools, equipment and their maintenance
 | * Written tests
* Observation
* Oral questioning
* Practical tests
 |
| 1. Wash sweet potato roots
 | * Importance of washing sweet potatoes
* Raw material contaminants
* Methods of washing
	+ Manual
	+ Mechanical
* Factors determining the choice of washing method
* Operation and basic maintenance of washing machines & equipment
 | * Written tests
* Oral questions
* Practical tests
* Observation
 |
| 1. Steam and cool sweet potato roots
 | * Size reduction and its significance
* Size reduction methods
* Size reduction tools and equipment
* Cooking/preparation methods
	+ Boiling
	+ Steaming
* Advantages and Disadvantages of each cooking method
* Effects of each cooking method on puree quality-nutritional value, moisture content.
* Cooling techniques
	+ Advantages and disadvantages
* Operation and basic maintenance of steamer and chiller
 | * Written tests
* Oral questions
* Practical tests
* Observation
 |
| 1. Puree steamed sweet potato roots
 | * Introduction to sweet potato puree.
* Importance of puree and its application in baking, pastries and fermented products
* Operations and basic maintenance of pureeing machine
	+ Cleaning
	+ Assembly
 | * Written tests
* Oral questions
* Practical tests
* Observation
 |
| 1. Package sweet potato puree
 | * Functions of packaging
* Types of puree packaging
	+ Vacuum packaging
* Operation and basic maintenance of packaging equipment.
* Packaging materials for puree-hermetic packaging bags/drums, re-usable cans, plastic bags
* Factors to consider in selection of puree packaging material
* Labeling and coding of the product.
 | * Written tests
* Oral questions
* Practical tests
* Observation
 |
| 1. Store sweet potato puree
 | * Significance of food storage
* Storage methods and conditions.
* Warehouse operation and maintenance
* Tools and equipment for product storage and dispatch
	+ Cold chain management
 | * Written tests
* Oral questions
* Practical tests
* Observation
 |

**Suggested Methods of Instruction**

* Direct instruction
* Field trips/site visits
* Group discussions
* Demonstration by trainer
* Practice by the trainee
* Exercises

**List of Recommended Resources**

* Computers
* Projectors
* Flip charts
* Calculators
* Internet

# SWEET POTATO FLOUR

**UNIT CODE:** AGR/CU/SPP/CR/02/4/A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Produce sweet potato flour

**Duration of Unit:** 80 Hours

**Unit Description**

This unit specifies the competencies required to produce sweet potato flour. It involves sorting and grading sweet potato roots, cleaning sweet potato roots and drying sweet potato chips. It also involves milling sweet potato chips and packaging sweet potato flour.

**Summary of Learning Outcomes**

1. Sort and grade sweet potato roots
2. Clean sweet potato roots
3. Dry sweet potato chips
4. Mill sweet potato chips
5. Package sweet potato flour

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Sort and grade/trim sweet potato roots
 | * Difference between sorting and grading/trimming
* Sorting and grading/trimming tools and equipment
* Operation and maintenance
* Sorting and grading/trimming methods
 | * Written tests
* Observation
* Oral questioning
* Practical tests
* Supervised exercises
 |
| 1. Clean sweet potato roots
 | * Raw material contaminants
* Factors determining the choice of a cleaning method
* Cleaning tools and equipment
* Cleaning methods
* Dry cleaning
* Wet cleaning
 | * Observation
* Written tests
* Oral questions
* Practical tests
* Supervised exercise
 |
| 1. Dry sweet potato chips
 | * Importance of drying
* Drying pre-treatments
* Drying tools and equipment
* Drying methods
* Advantages and disadvantages of each drying method
 | * Observation
* Written tests
* Oral questions
* Practical tests
* Supervised exercise
 |
| 1. Mill sweet potato chips
 | * Milling methods
* Types of mills
* Hammer
* Disc
* Roller
 | * Written tests
* Oral questions
* Practical tests
* Supervised exercises
 |
| 1. Package sweet potato flour
 | * Factors influencing choice of a packaging material
* Packaging materials, their advantages and disadvantages
* Packaging tools and equipment
* Packaging methods
* Labelling and coding
* Storage
* Utilization of sweet potato flour
 | * Observation
* Written tests
* Oral questions
* Practical tests
 |

**Suggested Methods of Instruction**

* Direct instruction
* Field trips/site visits
* Group discussions
* Demonstration by trainer
* Practice by the trainee
* Exercises

**List of Recommended Resources**

* Computers
* Projectors
* Flip charts
* Calculators
* Internet

# SWEET POTATO CRISPS

**UNIT CODE:** AGR/CU/SPP/CR/03/4/A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Produce sweet potato crisps

**Duration of Unit:** 80 Hours

**Unit Description**

This unit specifies the competencies required to produce sweet potato crisps. It involves sorting and grading sweet potato roots, cleaning sweet potato roots and preparing sweet potato slices. It also involves frying sweet potato slices, seasoning sweet potato crisps and packaging sweet potato crisps.

**Summary of Learning Outcomes**

1. Sort and grade sweet potato roots
2. Clean sweet potato roots
3. Prepare sweet potato slices
4. Fry sweet potato slices
5. Season sweet potato slices
6. Package sweet potato crisps

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Sort and grade /trim sweet potato roots
 | * Difference between sorting and grading/ trimming
* Sorting and grading/trimming tools and equipment
* Sorting and grading methods
 | * Written tests
* Observation
* Oral questioning
* Practical tests
* Supervised exercises
 |
| 1. Clean sweet potato roots
 | * Raw material contaminants
* Factors determining the choice of a cleaning method
* Cleaning tools and equipment
* Cleaning methods
	+ Dry cleaning
	+ Wet cleaning
 | * Observation
* Written tests
* Oral questions
* Practical tests
* Supervised exercises
 |
| 1. Prepare sweet potato slices
 | * Peeling tools and equipment
* Peeling methods, advantages and disadvantages
	+ Hand
	+ Caborandum
	+ Hot water peeling
	+ Lye peeling
* Peel disposal
* Slicing tools and equipment
* Slicing methods
 | * Observation
* Written tests
* Oral questions
* Practical tests
* Supervised exercises
 |
| 1. Fry sweet potato slices
 | * Frying conditions
	+ Temperature
	+ Time
	+ Oil quality
* Frying tools and equipment
* Frying methods
* De – oiling
* Grading of crisps
 | * Written tests
* Oral questions
* Practical tests
* Observation
* Supervised exercises
 |
| 1. Season sweet potato slices
 | * Importance of seasoning
* Types of seasoning and seasoning ingredients
* Seasoning tools and equipment
* Seasoning methods
 | * Written tests
* Oral questions
* Practical tests
* Observation
 |
| 1. Package sweet potato crisps
 | * Factors influencing choice of a packaging material
* Packaging materials, their advantages and disadvantages
* Packaging tools and equipment
* Packaging methods
	+ Vacuum packaging
	+ Inert gas packaging
* Labelling and coding
* Storage
 | * Written tests
* Oral questions
* Practical tests
* Observation
 |

**Suggested Methods of Instruction**

* Direct instruction
* Field trips/site visits
* Group discussions
* Demonstration by trainer
* Practice by the trainee
* Exercises

**List of Recommended Resources**

* Computers
* Projectors
* Flip charts
* Calculators
* Internet

# DRY SWEET POTATO CHIPS

**UNIT CODE:** AGR/CU/SPP/CR/04/4/A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Produce dry sweet potato chips

**Duration of Unit:** 70 Hours

**Unit Description**

This unit specifies the competencies required to produce dry sweet potato chips. It involves sorting and grading sweet potato roots, cleaning sweet potato roots, preparing sweet potato chips, drying sweet potato chips and packaging sweet potato chips.

**Summary of Learning Outcomes**

1. Sort and grade/trim sweet potato roots
2. Clean sweet potato roots
3. Prepare sweet potato chips
4. Dry sweet potato chips
5. Package sweet potato chips

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Sort and grade/trim sweet potato roots
 | * Difference between sorting and grading/trimming
* Sorting and grading/trimming tools and equipment
* Sorting and grading/trimming methods
 | * Written tests
* Observation
* Oral questioning
* Practical tests
* Supervised exercises
 |
| 1. Clean sweet potato roots
 | * Raw material contaminants
* Factors determining the choice of a cleaning method
* Cleaning tools and equipment
* Cleaning methods
	+ Dry cleaning
	+ Wet cleaning
 | * Observation
* Written tests
* Oral questions
* Practical tests
* Supervised exercises
 |
| 1. Prepare sweet potato chips
 | * Size reduction/chipping tools and equipment
* Size reduction/chipping methods
 | * Observation
* Written tests
* Oral questions
* Practical tests
* Supervised exercises
 |
| 1. Dry sweet potato chips
 | * Importance of drying
* Drying pre-treatments
* Drying tools and equipment
* Drying methods
 | * Observation
* Written tests
* Oral questions
* Practical tests
* Supervised exercises
 |
| 1. Package sweet potato chips
 | * Factors influencing choice of a packaging material
* Packaging materials, their advantages and disadvantages
* Packaging tools and equipment
* Packaging methods
* Labeling and coding
* Storage
 | * Observation
* Written tests
* Oral questions
* Practical tests
 |

**Suggested Methods of Instruction**

* Direct instruction
* Field trips/site visits
* Group discussions
* Demonstration by trainer
* Practice by the trainee
* Exercises

**List of Recommended Resources**

* Computers
* Projectors
* Flip charts
* Internet

# FOOD SAFETY AND QUALITY ASSURANCE

**UNIT CODE:** AGR/CU/SPP/CR/05/4/A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Manage food safety and quality assurance

**Duration of Unit:** 60 Hours

**Unit Description**

This unit specifies the competencies required to manage food safety and quality assurance. It involves implementing pre - requisite programs, identifying and implementing HACCP concepts, observing food safety legislations and standards and implementing quality control programs.

**Summary of Learning Outcomes**

1. Implement pre – requisite programmes
2. Identify and implement HACCP concepts
3. Observe food safety legislations and standards
4. Implement quality control programmes

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Implement pre – requisite programs
 | * Good manufacturing practice (GMP)
* Standard operating procedures (SOPs)
 | * Observation
* Oral questions
* Written tests
* Practical tests
 |
| 1. Identify and implement HACCP concepts
 | * Food hazards
* Chemical hazards
* Biological hazards
* Physical hazards
* HACCP principles
* Components of HACCP plan
 | * Written tests
* Observation
* Oral questioning
* Practical tests
 |
| 1. Observe food safety legislations and standards
 | * Types of standards
* Kenya standards
* KEBS certification
* CODEX standards
* Food legislation and enforcement
* Food regulations
 | * Written tests
* Oral questions
* Practical tests
* Observation
* Third party report
 |
| 1. Implement quality control programs
 | * Importance of quality control
* Raw material and input control
* Process and production control
* Finished product control
* Quality control tools and equipment
 | * Observation
* Written tests
* Oral questions
* Practical tests
* Supervised exercises
 |

**Suggested Methods of Instruction**

* Direct instruction
* Field trips/site visits
* Group discussions
* Demonstration by trainer
* Practice by the trainee
* Exercises

**List of Recommended Resources**

* Computers
* Projectors
* Flip charts
* Calculators
* Internet