MINISTRY OF EDUCATION, YOUTH & INFORMATION

Centre of Occupational Studies
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THE CENTRE OF OCCUPATIONAL STUDIES

CURRICULUM

OCCUPATIONAL ASSOCIATE DEGREE
in
AGRO FOOD PROCESSING

Developed By

THE CENTRE OF OCCUPATIONAL STUDIES
MINISTRY OF EDUCATION, YOUTH and INFORMATION
JAMAICA

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COS 2018

INTRODUCTION

Aligned with the goals of the National Development Plan for Jamaica, is the thrust for educational development through opportunities of higher learning and professional development. One element of this thrust is the development and implementation of Occupational Programmes of Study. Occupational Certification is designed to bridge the gap between traditional and TVET education at the tertiary level.

Occupational Studies involves the training and assessment to support the development of competence in specific skills/occupations, designed to prepare individuals for employment. Occupational programmes are defined by the methodologies of Competency Based Education and Training (CBET), and the Technical Vocational Education Training (TVET) strategies for the development of competent workforces. A critical operational principle of the CBET Policy is that the development of Training, Assessment and Certification Programmes must be designed upon the occupational competencies of the workplace that is the needs, demands and requirements of employment.

The term **curriculum** refers to the lessons and academic content taught in a school or in a specific course or program. The design and development of this Occupational Associate Degree curriculum has incorporated the CBET Principles, the National Vocational Qualification of Jamaica, benchmarked against other international standards and similarly recognized international programmes of like nature. It is also reflective of the Educational, TVET, Social, Cultural and Economic goals of the Vision 2030 Development Plan for Jamaica.

The Occupational Degree Curriculum is designed to aid the professional and competency based pathway for persons to develop occupational competencies across the specific skill areas at various levels, with an emphasis on academic and personal cognitive development. This parallel pathway will allow persons to have comparable credentials of recognition to those of their counterpart perusing academic studies.

OCCUPATIONAL RATIONALE

A country's global competitiveness is a function of the quality of its workforce and therefore, a skilled workforce is essential for sustainable, and balanced growth. The Planning Institute of Jamaica, in the 2012 survey of living conditions, reported that the age 14 and over population without certification at any level was 69.6 per cent. Some 90.7 per cent of the poorest in the population had no certification while among the wealthiest, the figure was 53.5 per cent. Non-certification among the Prime Working Age (25 – 29) was at 70.1 percent, males with no certification was 77.1 percent, and females were 64.0 percent. In the Kingston Metropolitan Area, the number of people without formal certification was 39.4 percent. Clearly, there is the need for relevant and accessible educational training opportunities that are designed to create a globally competitive workforce. The industry through a needs analysis, also clearly identified and defined the need for a workforce complimented by qualified employees with applied knowledge and skills in selected areas of study; to provide effective and efficient supervisory and leadership competencies.

The development of occupational certification is further rationaled by the obvious necessity to align higher education with the emerging needs of workplace and industry as well as the growing relevance of occupational certification internationally.

Philosophical Principles

Programmes in Occupational Studies will be developed against the philosophical principles that,

- Professional knowledge is what a learner should know and understand regarding the subject.
- Professional skills are what a learner should be able to do.
- Core skills refer to basic skills involving dexterity and use of methods, materials, tools and instruments used to perform the job including Information Technology skills needed for that job.
- Responsibility aspect determines the
    - Nature of working relationship,
    - Level of responsibility for self and others
    - Managing change and
    - Accountability for actions.

CONTENTS

13. Supervising Work Priorities and Staff Development		
14. Farm Accounting and Cost Control		
15. Supervising Processing Systems and Operations		
16. Applying the Principles of Food Preservation		
17. Estimating & Calculating Project Costs		
18. Purchasing, Receiving and Storing Materials & Stock		
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20. Marketing Processed Food Products		
21. Producing & Processing Milk and Milk Products		
22. Processing Nuts Cereal and Grains		
23. Processing Protein Products		
24. Managing Utilities and Water Treatment		
25. Major Capstone Project		
26. Acquiring Industry and Professional Recognitions		
27. Internship/ Externship (Work Attachment)		

Acknowledgement

The Centre of Occupational Studies acknowledges the professional and intellectual contribution of the institutions and organisations which served in the development of the Occupational Associate Degree in Agro-Food Processing.

This Curriculum being designed on workplace competencies and recognized Occupational Standards, required the input and validation of trainers, lecturers, instructors, industry professionals and learning resource developers.

Paramount to the development of this curriculum was the collaborative efforts of representatives from the below entities. It is therefore with respect and regard for competent learning and quality service that the Centre of Occupational Studies acknowledges:

- HEART –Trust/NTA

- College of Agricultural Science and Education

Matriculation Requirements

For matriculation or entry into the Occupational Associate Degree programme applicants must meet/possess at least one of the below requirements:

- Career Advancement Programme (CAP) NVQ/CVQ, Minimum Level 2 Certification
- HEART Trust/NTA, NVQ – Minimum Level 2 Certification
- Other entry requirements – in accordance with the respective COS Institution minimum entry requirements.
- Mature Entry

  Applicants with relevant experience of service in the sector may seek to pursue this programme. The mature entry status should be further specified and confirmed in accordance with the relevant policies and procedures established at the institution hosting this programme. Applicants who qualify under this category must pass a college readiness test of English and Mathematics and are required to submit a professional portfolio which

will be used to determine eligibility. Mature entrants may be required to complete bridging courses prior to enrollment into this programme being guided by the institutional policies and procedures specific to same.

Entry Test

All applicants requesting enrollment into this programme MUST sit the COS recommended entry test (ASSET Test).

Entry Points

- Entry at the start of the programme: Candidates can enter this OAD Programme at the commencement, year 1 semester 1.
- Entry at the start of the year two: Candidates can enter this OAD programme at the commencement of year 2 semester 1, provided the candidate satisfies the minimum proficiency rating of the demonstrated occupational outcomes of all prerequisite and prior sequenced courses in the year 1.

Exemptions

Prior Learning Assessment/Advanced placement may be sought by trainees who have successfully completed courses taken through a recognized technical vocational institution or recognized certifying body. Trainees may apply for credit transfer in accordance with the Transfer Policies and Procedures of the institution offering this programme, in consultation with the COS. Successful applicants will receive exemptions from eligible units of competency once requirements for obtaining credit transfer are satisfied.

Design Format

This Curriculum is packaged in discrete Courses of Employable Skills which can be independently delivered and assessed; however, there are courses which are competency builders for others. These courses, although independently teachable and assessable, may be prerequisite courses and should be attained by the student prior to commencement of the respective course to be pursued.

Programme Structure

The Occupational Associate Degree Programme is structured to be delivered over 4/5 semesters. The programme should be completed within the limits as stated below:

- By full-time study the programme is normally two years. The time limit to complete the programme must not exceed three years.
- By part-time study, the programme is expected to be completed within three years, but must not exceed four years.

The programmes are structured to provide a mixture of:

- general education courses
- support courses
- specialized courses
- industry experience

The Programme Structure consists of a number of Courses. The following are the components of each course:

1. Course Parameters

The parameters detail the name of the *faculty*, the *programme name*, the *course name*, the *course code,* the *credit hours*, the *credit value*, *semester and year*, *prerequisite course*; and the *approving authority*.

2. Learning Outcomes and Instructional Objectives

The set the boundaries for the learners' attainment, as well, as that for the instructors'/lecturers' delivery of content.

3. Units

The Units are the building blocks for the course; they have *Specific Objectives,* which form the instructional strategies for the delivery of the unit and the basis for the development of assessment strategies and project assignments. The course content is each Unit. It sets the range and depth of

knowledge, skills and attitudes to be covered by each instructor/lecturer. It serves to standardize the instructors/lecturers.

4. Credit Hours & Credit Value

Credit Hours is the time suggested for the duration of the delivery time. Credit Value is the credit requirements aligned with the credit hours, for certification or the granting of the Award. The theory courses are calculated as 15 hours per credit with a minimum of 45 hours of instruction and practical courses are calculated at 45 hours per credit with a maximum of 4-6 credits per course.

5. Capstone Experience

The Capstone Experience outlines industry specific tasks/assignments the students will undertake to consolidate their learning by incorporating the competencies gained. Students' capstone experience is represented in a project, undertaken after successful completing and acquiring the requisite competencies of all courses in the programme.

6. Resources

The resources required to support the attainment of the learning and instructional objectives are indicated, these often include: human resources, materials, text, etc.

7. Industry Experience – Internship/Externship

The Associate Degree programmes include a work experience component which allows students to gain practical skills and observe and apply management principles and theories. Students pursuing an this degree are required to complete 240 hours of Industry Experience. Exemptions may be granted at the discretion of the institution.

8. Methodology

The methods of delivery are the suggested instructional strategies use in the delivery of the specific programme. **These learning strategies are intended to encourage, in each student, the following competencies; the ability to:**

- manage resources within defined areas of work
- make independent choices and solve routine problems independently

- transfer and apply theoretical concepts and technical skills to a range of contexts
- judge the reliability and validity of different sources of information
- manage, under guidance, ethical and professional issues in accordance with current professional and/or ethical codes or practices
- understand the importance of Standard English in written, spoken or visual messages in the field of Renewable Energy
- understand the value of life-long learning to a professional in the field of Renewable Energy
- demonstrate awareness of own and others' roles, responsibilities and contributions when carrying out and evaluating tasks
- demonstrate tolerance and temperance when interacting with others.
- develop the performance of the requisite technical competencies relevant to the unit and the course of study
- increase the independence of the learner
- create critical thinkers
- equip learners to enter the corporate world

A variety of strategies will be used to facilitate student learning and competency development. The list includes, but is not limited to, combinations of the following:

- Interactive lectures
- guest lectures
- group discussions/ Think-pair-share
- case studies
- audio visual presentations
- independent study
- individual/group research/projects
- individual/group presentations
- laboratory work
- practical demonstrations
- problem solving
- site visits (including virtual visits)
- seminars/workshops

- blended delivery to include the use of the Internet/Intranet

9. Occupational Assessment (OA) & Evaluation

The curriculum is designed to accommodate occupational assessment and evaluation, similar to that of competency based assessment. This is where student learning, competency development and demonstrated performance is assessed on an on-going basis in alignment with the specific learning outcomes for each course. This approach allows for corrective development and learning.

All assessment is designed to measure the level of mastery a student has achieved of the competencies stated in the course syllabus. Student competencies are displayed, as much as possible, in a real or simulated workplace environment. Where it is not possible for this to be done, students are presented with an opportunity to display competencies in a context that is familiar to them.

Assessment instruments are designed to produce valid and reliable grades that are used to inform planning, and competencies are measured in contexts which are student-centered, and provide opportunity for verification of the authenticity of students' work.

Occupational Assessment for this programme will outline in each course outline:

- the suggested unit/ cluster-of-units to be assessed, (for example, UNIT I, II and III)
- the suggested strategy/type(s) of Occupational Assessment (OA), (example, OA – Group research paper and presentation)
- the percentage weight which each grade will represent in the final grading for rating, (for example, 20%)

An occupational assessment/evaluation can be a combination of any of the following.

- Tests/written paper
- Laboratory activities
- Practical demonstrations (in-class, field)
- Projects (individual or group)
- Oral reports and presentations (in-class)
- Graphical displays

- Self and peer evaluations

In applying an on-going assessment approach, the view of final examination will must not be observed, instead assessment which is scheduled at the end of the semester will cover the remaining units to be to be assessed. The facilitating team within the institution has the liberty to determine to, should the need be observed, minimally include previously assessed units based on an alignment with the main units to be assessed.

The end of semester assessment will be any of or a combination of any of the following:

- Multiple Choice Questions (MCQs) & Structure Questions (SQs)
- Practical Assignments (PAs)

Portfolio of Assessment

A Portfolio of Occupational Assessment will be developed by each student on a per semester basis. The portfolio is intended to capture for external verification purposes, evidences of occupational assessment activities and related outcomes. The institution is required to provide mentoring to students in the development of individual portfolios.

Feedback

Students will be given analytic rubric within the first contact period of the course. Each student will also be given written and oral feedback. Feedback will be immediate and no longer than one week after a task is assessed. Feedback may be documented on assessment evidence/instrument.

10. Proficiency Rating/Grading Scheme

A student's ***final grade*** which determines the ***competency rating*** is calculated by the combination of the on-going assessment grades. *See the Grading Scheme below.*

11. Recommendations to Programme Administrators/Lecturers

This Occupational Associate Degree is designed on the CBET Principles to reflect the requirements of industry, as well as, that of the learning institution. It is therefore important that individuals responsible for programme administration, programme delivery and the management of the

assessment and certification processes exercises due process to actualize the principles of Competency Based Education and Training (CBET) in the Teaching and Learning experiences. It is being recommended that Experiential Learning Strategies be a critical feature of the process. The Assessment Processes employs Authentic and Fair Assessment Strategies to confirm students' competencies. Assessment should not only be for the confirmation of competence but also be used as a catalyst for improving the instructional process and students' achievements

Awarding of Degree

Upon completion of the below, participants who have pursued the Agro-Food Processing programme with be awarded an ***Occupational Associate Degree in Agro-Food Processing.***

Participants must have:

1. completed all courses as specified by the programme
2. completed two hundred and forty (240) hours of Work Experience
3. met all other requirements as outlined by individual institutions and the *Centre of Occupational Studies within the Ministry of Education Youth and Information*

Mark Range (where applicable)	Grade Point Average (GPA)	Letter Grade	Description
95-100% 90 – 94%	4.00 3.80	A+ A	High Competence: where the student has demonstrated highly original, relevant and sophisticated applications of research, appraisal, enquiry and evaluation techniques resulting in innovative concepts that challenge existing conventions In the field of study.
85 – 89%	3.70	A-	Competence with Distinction: where the student has demonstrated a high level of performance indicating depth and breadth in research, appraisal, enquiry and evaluation with broad application of knowledge of theoretical concepts, and applied analytical thought.
80 – 84% 75 – 79%	3.60 3.30	B+ B	Competence with Credit: where the student has untaken an innovative and creative interpretation of assessment briefs, and has provided evidence of extended research and inquiry applied to assessments tasks.
70-74	2.70	B-	Competent: where student has met all requirements of assessment tasks to a satisfactory level.
65-69 60-65	2.30 2.00	C+ C	
55-59 50-54	1.70 1.30	C-	

Under 50 (45-49)	**1.00**	**D**	NYC: where the student has not demonstrated satisfactory performance in assessment tasks or has not met subject requirements.
Under 45	**1.00**	**E**	
NYC of a 'must pass event'			**Not Yet Competent:** where the student has an overall mark for the subject at a passing level, but has not demonstrated satisfactory performance to be deemed competent.
Withdrawn no penalty: a) Where the student has withdrawn from the subject on or before the census date b) Where the student has withdrawn from subject after consultation, without penalty c) Where the student has withdrawn from the subject due to serious illness or misadventure			
Deferred result: Where, for approved reasons, health or misadventure, a student is allowed to resubmit an assessment or sit an exam at a later date.			

PROFILE
OCCUPATIONAL ASSOCIATE DEGREE
AGRO-FOOD PROCESSING

Programme Rationale

Jamaica has been known for its naturally vibrant Agricultural Industry. While it has suffered from the unforeseen impacts of nature, the industry still remains relevant to individual, family and nation building. The Agricultural industry is expanding locally, regionally and internationally. Accordingly, there is a high level of employment demand for competent workers in the industry. Additionally, there is the opportunity for self-employment through entrepreneurial ventures.

Research conducted by the Labour Market Research and Intelligence Department (LMRID) of the HEART Trust/NTA has helped to inform the development of this programme. "With reference made to the Vision 2030 Agriculture Sector Plan, factors affecting the sector includes, poor education levels of most farmers; high levels of informality in marketing and distribution channels; inability to consistently supply markets due to declining production..." Hence, a clear indicator for a pathway for advance technical and professional development. The following occupational areas were identified as emerging or booming occupational areas by stakeholders; Small Equipment Maintenance, Agricultural Equipment Operator, Drip Irrigation Management…" The 2016 Programme Rationalization Report, as a labour market intelligence gathered through primary research conducted by the stated Department indicates that the following occupational areas are in increased demand or are projected to be in demand by the 2019/2020 financial year: Agricultural Extension Officer, Agricultural Research Specialist, Agronomist, Horticulturist, Irrigation Specialist, Pest Controller, Small Equipment Mechanic. These agricultural sub-sectors were identified as emerging or booming sub-sectors by stakeholders:

- Agro Processing
- Ornamental Fishing
- Sheep Production
- Agricultural Research
- Budding and Grafting
- Organic Farming
- Duck Production
- Sea Island Cotton Production
- Tilapia Fishery

These factors together, helped to form the conclusion for the need for advanced occupational training in this discipline, coupled with the fact that this occupational programme provides a pathway for advance technical and professional development of persons trained/being trained and or practicing in the industry.

Programme Description

The Occupational Associate Degree Programme in Agro Food Processing is an Applied Associate Degree which is designed on workplace competencies. It is developed for persons who are desirous of developing the knowledge, skills and attitudes necessary to become well-rounded in the processing of agricultural produce, involving: nutrition in food processing, sanitation and hygiene, entrepreneurship, packaging and labelling, supervising food processing, warehousing and distribution, producing and processing specific products – milk, nuts, proteins; etc.

As an occupational programme the development of competencies in agro food processing are enabled through the integration of academia and technical/vocational training relevant to the occupational programme. The duration of study is projected for two years across four administrative semesters and a summer internship/externship (work attachment component) component. The programme design combines related underpinning academic competencies with the practical occupational competencies. The programme allows for a "work-ready" and "employable" graduate who can contribute to and create/add value to their place of employment, the industry and the nation. The development of these competencies are complimented by the professional development courses in in this programme; aimed at developing an occupational and workplace competent individual, through application of critical employability skills; science, technology, engineering, arts and mathematics (STEAM) skills and a general awareness of, sensitivity to and appreciation for human diversity. As such, the programme takes a learner-centred approach to instruction and considers the varied needs of students in the use of instructional and assessment strategies.

The programme is also designed at a level where graduates can not only earn an institutional certification, but in addition, professional and or industry recognitions including license required for professional practice.

At the end of the programme, students who are deemed competent in the specific requirements for this programme/successful will be awarded an **Occupational Associate Degree in Agro Food Processing.**

Programme Goals

The Agro Food Processing programme addresses the growing need for competencies related to the occupational discipline. The programme seeks to produce rounder graduates who will exhibit the abilities and competencies to function as junior supervisors with the capacity to grow and develop in the industry and continue on to higher levels of education.

Upon completion of this programme graduates should be able to:

- Applying Principles of Nutrition to Food Processing
- Packaging and Labelling Processed Foods
- Maintaining Food Safety and Security Systems
- Maintaining Sanitation and Hygiene
- Providing Customer Service
- Practice Entrepreneurship & Business Development Skills
- Maintaining Quality in Food Processing
- Supervising Production Processes
- Operate Warehouse and Distribution Systems
- Provide Farm Accounting and Cost Control Skills
- Supervising Processing Systems and Operations
- Applying the Principles of Food Preservation
- Estimating & Calculating Project Costs
- Effectively Purchase, Receive and Store Materials & Stock
- Supervise Personnel
- Market Processed Food Products
- Process Milk and Milk based Psroducts
- Process Nuts Cereal and Grains
- Process Protein Products
- Managing Utilities and Water Treatment

. Employment/Career Opportunities

The competencies and professional skills to be developed by this programme are the basis for an expanding variety of rewarding careers locally and internationally. Upon completion, graduates may be eligible for employment as:

- Production Supervisor
- Inventory Manager
- Purchasing Manager
- Distribution Manager
- Food Technologist
- Nutritionist
- Warehouse Manager
- Production Manager
- Logistics

PROGRAMME STRUCTURE AND SEMESTERISATION

Foundation General Education Courses: Critical to the delivery of this Occupational Degree Programme is the inclusion of general foundation courses, in the following subject areas: **Mathematics, Communication and Computer Application.** These courses will be timetabled and included in the training and delivery programme by the institution.

Year 1 - Semester 1

Course Code	Course	Credit Value	Credit Hours
AFP SES101S1	Using Social & Employability Skills	3	45
AFP NUT102S1	Applying Principles of Nutrition to Food Processing	3	45
AFP PLP103S1	Packaging and Labelling Processed Foods	3	45
AFP SEC104S1	Maintaining Food Safety and Security Systems	3	45
AFP MSH105S1	Maintaining Sanitation and Hygiene	3	45
GED COM101S1	Applied Foundation Communication I	3	45
Total	**6**	**18**	**270**

Year 1 – Semester 2

Course Code	Course	Credit Value	Credit Hours
AFP CS101S2	Providing Customer Service	3	45
AFP ENTR102S2	Entrepreneurship &	3	45

	Business Development		
AFP ACOM103S2	Applied Communication Skills II	3	45
AFP QUAL104S2	Building and Maintaining Quality in Food Processing	3	45
AFP PRO105S2	Supervising Production Processes	3	45
AFP WDS106S2	Operating Warehouse and Distribution Systems	3	45
AFP WSD107S2	Supervising Work Priorities and Staff Development	2	60
AFP EMP108S2	Internship/Externship (Work attachment)	6	240
Total	**9**	**26**	**570**

Year 2 – Semester 3

Course Code	Course	Credit Value	Credit Hours
AFP FACC101S3	Farm Accounting and Cost Control	3	45
AFP PSO102S3	Supervising Processing Systems and Operations	2	60
AFP PRES103S3	Applying the Principles of Food Preservation	2	60
AFP CPC104S3	Estimating & Calculating Project Costs	2	60
AFP MAS105S3	Purchasing, Receiving and Storing	3	45

	Materials & Stock		
Total	**5**	**12**	**270**

Year 2 – Semester 4

Course Code	Course	Credit Value	Credit Hours
AFP PER101S4	Supervising Personnel	3	45
AFP MKT102S4	Marketing Processed Food Products	2	60
AFP PPM103S4	Producing & Processing Milk and Milk Products	2	60
AFP GRN104S4	Processing Nuts Cereal and Grains	2	60
AFP PTN105S4	Processing Protein Products	2	60
AFP UWT106S4	Managing Utilities and Water Treatment	1	45
AFP CAP107S4	Major Capstone Project	1	45
AFP CERT108S4	Acquiring Industry and Professional Recognitions	1	45
Total	**8**	**14**	**420**

Course Codes: Note that all programme and course codes are under official review. Final approved programme and course codes will be communicated through a revision and promulgation of this document.

COURSE OUTLINES

YEAR 1

SEMESTER 1

FACULTY OF AGRICULTURE	
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO-FOOD PROCESSING
COURSE NAME:	USING SOCIAL & EMPLOYABILITY SKILLS
COURSE CODE:	AFP SES101S1
COURSE HOURS:	45 HOURS (45 Hours Theory)
CREDIT VALUE:	3
PREREQUISITES:	NONE
YEAR/SEM.:	YEAR 1, SEMESTER 1
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DESCRIPTION

This course is designed to actively engage students in their career development process through exposure to the use of employability skills to develop personal and professional competencies.

LEARNING OUTCOMES AND INSTRUCTIONAL OBJECTIVES

Upon completion of this course, students will be able to incorporate a multi-faceted approach in fostering the necessary skills and attributes that will be needed to meet and exceed personal and professional standards within the Agro-processing industry.

Upon successful completion of this course, students are competent when they are able to:

1. Develop an awareness of key fundamental steps in identifying their career journey.
2. Display an awareness of professional standards and principles that guide their development.
3. Demonstrate a working knowledge of the interpersonal skills needed by a professional employees within the renewable energy sector
4. Develop the competences required in managing change within the organization and industry and

5. Design a plan for professional and personal development through self-assessment.

UNIT I: PLAN PROFESSIONAL DEVELOPMENT 3 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

1.1 Define the scope of Professional Development

1.2 Recognize the importance of Professional Development

1.3 Define who is a Professional

1.4 Identify Key skills/characteristics and core values of a professional

1.5 Discuss the importance of being a life-long learner

Content

To include but not limited to:

- Definition of Professional Development
- Importance of Professional Development
- Definition of a Professional
- Key skills/characteristics of a Professional
- Innate vs. Learnt Behaviour
- Core Values vs. Beliefs
- Evaluation of traits and habits of successful business persons
- Life-Long Learner

UNIT II: ADHERE TO PROFESSIONAL STANDARDS 3 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

2.1 Identify the professional standards of the sector.

2.2 Demonstrate awareness in the practices involved in professional development.

Content

To include but not limited to:

- Ability, Attitude and Aptitude
- Principles to guide the quest for Professional Development - Great Respect And Consideration for Everyone (G.R.A.C.E), Treating others as you would want to be treated etc
- Industry standards for Tourism, Hospitality & Culinary Arts & Production

UNIT III: ANALYZE AND DISCOVER SELF 2 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

3.1 Assess current status in their personal & professional development

3.2 Undertake personal S.W.O.T Appraisal

3.3 Suggest techniques to improve identified weaknesses and threats

Content

To include but not limited to:

- Who am I?
- What do I really want to do
- S.W.O.T Analysis
- Aptitude Assessment

UNIT IV: IMPLEMENT CAREER DEVELOPMENT PLANS AND GOALS 3 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

4.1 Recognize the importance of Goal Setting

4.2 Create S.M.A.R.T Goals linked to their Career Development Process

4.3 Identify what needs to be done in completing their career development process

Content

To include but not limited to:

- Definition of Goal Setting
- Classification of the acronym S.M.A.R.T
- Career Development Process

UNIT V: APPLY BUSINESS ETIQUETTE, PROTOCOL AND GROOMING 6 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

5.1 Demonstrate good business etiquette

5.2 Demonstrate confidence in all aspects of dining etiquette

5.3 Apply the techniques for dressing on a budget

5.4 Recognize the importance of employing proper grooming

Content

To include but not limited to:

- Business etiquette
- Dining etiquette
- Executive presence
- First Impressions
- Dressing on a Budget
- Grooming

UNIT VI: MANAGE CHANGE 3 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

6.1 Recognize the dynamic nature of renewable energy sector

6.2 Demonstrate behaviour required to managing change

6.3 Explore the various ways employees respond to the changing work environment

6.4 Recognize and adapt to the diversity within the work place

Content

To include but not limited to:

- Stress Management and Techniques
- Time Management and Techniques
- Emotional Intelligence
- Management Styles
- Understand the corporate culture
- Diversity - Gender - Race - Ethnicity - Sexual Orientation - Religion

UNIT VII: PRACTICE BUSINESS COMMUNICATION 3 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

7.1 Identify the key elements of writing a successful Resume & Cover Letter

7.2 Design a Resume & Cover Letter

7.3 Recognize the differences in written communication

7.4 Recognizing the Communication Process and Chain of Command of Organization

7.5 Use principles that guide Audio Visual Presentations

Content

To include but not limited to:

- Communication
- Resume Writing
- Cover Letters
- Written Communication - memorandums, speeches emails etc.
- Oral presentations
- Audio visual presentations

……

ASSESSMENT PROCEDURES

Students will take responsibility for their own academic achievement. Students will demonstrate their commitment to their own goal of educational advancement by attending class, completing assigned work, and complying with existing copyright legislations. To successfully complete this course, a student must pass ALL the different components of the course.

On-going Assessment Requirements			
No.	**Suggested Unit/Unit Cluster**	**Assessment Strategy**	**Weight**
1	**I, II, III,**	Two in-course tests	20%
2	**IV, V**	Practical Assignments/Projects	20%
3	**VI, VII, VIII**	Field/Laboratory/Practical Activities	40%
4	**IX, X**	Final Assignment	20%
Total			**100%**

FEEDBACK

Students will be given rubrics and grading schemes within the first contact period of the course. Each student will also be given written and oral feedback. Feedback will be immediate and no longer than one week after a task is assessed. Feedback may be document on assessment evidence.

INSTRUCTIONAL METHODS

This course will be taught using a combination of formal lectures, discussions, role playing, case studies and presentations.

CAPSTONE EXPERIENCE DESCRIPTION

Students will prepare and host in class post-harvest loss assessment using different crops. Students will be peered to present on the topics that will be given during the course. Each student is expected to present to the audience for 15 minutes. Students will also be taken on field trips of packing house, Min. of Agriculture, Plant Quarantine unit etc. Please refer to the assessment form.

RESOURCES

FACULTY OF AGRICULTURE	
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO-FOOD PROCESSING
COURSE NAME:	APPLYING PRINCIPLES OF NUTRITION TO FOOD PROCESSING
COURSE CODE:	AFP NUT102S1
COURSE HOURS:	45 HOURS (45 Hours Theory)
CREDIT VALUE:	3
PREREQUISITES:	NONE
YEAR/SEM.:	YEAR 1, SEMESTER 1
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DESCRIPTION

This course is designed to students the knowledge, skills and aptitudes to apply learning obtained about the Principles of Food Nutrition to the processing of foods p. The students will be given the opportunity to experiment and conduct research on the subject.

LEARNING OUTCOMES AND INSTRUCTIONAL OBJECTIVES

Upon completion of this course, students will be able to relate to concepts, theories and techniques, which are studied; develop and practice a range of technical competencies, personal competencies and social competencies; identify and develop career paths within their industry. It will also encourage students to develop important employability skills, make contacts with potential employers and construct work experience profiles commensurate with the demands of future employers and explore entrepreneurial opportunities.

Upon completion of this course, students are competent when they are able to:

1. Assess the purpose and importance of nutrition in food

2. Apply communication skills in the specific industry related area
3. Understand the importance of nutrition to food production
4. Explain food safety
5. Communicate factors that affect nutrition

UNIT I: APPLY KNOWLEDGE OF NUTRITION TO PROCESS FOODS 6 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

1.1. Define Nutrition
1.2. Explain the importance of nutrition to health
1.3. Explain the importance of nutrition to food production
1.4. Identify factors that contribute to good nutrition
1.5. Identify unsafe and unsuitable foods
1.6. Identify Food safety practices and general requirements

Content

To include but not limited to:

- Definition
- Contributing Factors
- Unsafe and Unsuitable Foods
- Food Safety

UNIT II: ASSESS NUTRITIONAL VALUES IN FOODS 8 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

2.1 Identify nutrients found in foods
2.2 Explain how nutrients affects food processing
2.3 Explain the four major nutrients of foods
2.4 Determine the impact of excess and deficiency of water, protein and carbohydrates in foods
2.5 Explain the roles of water, protein and carbohydrates in the human body
2.6 Identify the daily requirements of water, protein and carbohydrates

2.7 Identify the dietary sources of water, protein and carbohydrates

2.8 Develop a nutritional plan of a balanced meal

2.9 Apply the principles of nutrition to food production

Content

To include but not limited to:

Types of Nutrients

- Major Nutrients:
- Water
- Protein
- Carbohydrates
- Minerals
- Sources of nutrients
- Principles
- Impact on foods

UNIT III: COMPLY WITH FOOD SAFETY REQUIREMENTS 8 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

3.1 Explain food Safety

3.2 Explain the terms growing, harvesting, storage and preparation of foods

3.3 Identify potentially hazardous food

3.4 Identify Temperature control

3.5 Explain Cross-contamination

3.6 Adhere to Food Safety Requirements

3.7 Explain the pros and cons of: grilling meat, raw foods, and cooked foods

3.8 Explain the impacts of freezing, drying, cooking, and reheating foods

3.9 Apply ways to retain the maximum nutrition in processed foods

3.10 Explain the types of carcinogenic compounds produced by high-temperatures.

3.11 Apply practices to reduce the amount of HCAs and PAHs

Content

To include but not limited to:

- Carcinogenic Compounds:
  - Heterocyclic amines (HCAs)
  - Polycyclic aromatic hydrocarbons (PAHs)
  - Terms
  - Temperature Control
  - Cross Contamination
  - Retention of Nutrients
  - Pros and Cons
  - Hazardous Foods
  - Food Safety Requirements
  - Practices to reduce HCAs PAHs

UNIT IV: APPLY KNOWLEDGE OF PROCESSING ON VITAMINS LEVEL

10 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

4.1 Identify vitamins that are less affected by processing

4.2 Identify vitamins that are most affected by processing

4.3 Apply the correct principle of processing and storage of food

Content

To include but not limited to:

- Less Affected:
  - Niacin (vitamin B3)
  - Vitamin K
  - Vitamin D
  - Biotin (vitamin B7
  - Pantothenic acid (vitamin B5).
- Most Affected:

- Folate
- Thiamine
- Vitamin C.

UNIT V: IDENTIFY FACTORS AFFECTING FOOD NUTRIENT CONTENT

8 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

5.1. Identify the classification, functions and metabolism of nutrients.
5.2. Classify the various nutrients found in foods
5.3. Evaluate the functions of each nutrient
5.4. Identify deficiency symptoms
5.5. Apply methods to correct deficiencies
5.6. Describe how nutrients are metabolized
5.7. Explain the digestive pathway of nutrients
5.8. Identify the processes that can affect its nutritional content in food production

Content

To include but limited to:

- Classification, Functions and Metabolism:
  - The carbohydrates
  - The lipids
  - The proteins
  - The minerals
  - The Vitamins
  - Water
- Processes Affecting Nutrients:
  - Fertilizing
  - Milling
  - Blanching
  - Canning

- Freezing
- Pasteurization
- High pressure processing
- Dehydrating

- Methods
- Evaluate the Functions of Nutrients in Foods
- Deficiency Symptoms
- Metabolism in Foods

UNIT VI: CALUCULATE NUTRITIONAL VALUES 2 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

6.1 Explain the importance of nutritional values

6.2 Use appropriate methods to calculate nutritional value

6.3 Calculate nutritional values

6.4 Extract nutritional information from values calculated

6.5 Apply values in processing foods

Content

To include but not limited to

- Methods of calculation
- Type of Information
- Average Energy Content
- Energy Factors

UNIT VII: RESEARCH ACTS, REGULATIONS AND STANDARDS ON NUTRITION 2 HOURS

Specific Objective

Upon completion of this unit, students are competent when they are able to:

7.1 Research the Acts in Jamaica

7.2 Research implementation of Acts, Standards and Regulations in Jamaica

7.3 Prepare make presentations on findings

Content

To include but not limited to:

- Food Safety
- Manufacturing/Processing
- HACCP
- Health Standards

UNIT VIII: PREVENT THE IMPAC OF PESTICIDES AND OTHER CHEMICALS ON NUTRITION 2 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

8.1 Identify the Chemical sensitivities on foods.

8.2 Identify pesticide residues on food

8.3 Identify Organic food

8.4 Reduce exposure to pesticides and other chemicals

Content

To include but not limited to:

- Pesticide residues
- Types of chemicals
- Methods of reducing exposure
- Nature of Organic

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ASSESSMENT PROCEDURES

Students will take responsibility for their own academic achievement. Students will demonstrate their commitment to their own goal of educational advancement by attending class, completing assigned work, and complying with existing copyright legislations. To successfully complete this course, a student must pass ALL the different components of the course.

On-going Assessment Requirements			
No.	**Suggested Unit/Unit Cluster**	**Assessment Strategy**	**Weight**
1	**I, II, III,**	Two in-course tests	20%
2	**IV, V**	Practical Assignments/Projects	20%
3	**VI, VII, VIII**	Field/Laboratory/Practical Activities	40%
4	**IX, X**	Final Examination	20%
Total			**100%**

FEEDBACK

Students will be given rubrics and grading schemes within the first contact period of the course. Each student will also be given written and oral feedback. Feedback will be immediate and no longer than one week after a task is assessed. Feedback may be document on assessment evidence.

INSTRUCTIONAL METHODS

- Lectures
- Discussions
- Role playing
- Case Studies
- Presentations.

CAPSTONE EXPERIENCE DESCRIPTION

Students will prepare and host in class post-harvest loss assessment using different crops. Students will be peered to present on the topics that will be given during the course. Each student is expected to present to the audience for 15 minutes. Students will also be taken on field trips of packing house, Min. of Agriculture, Plant Quarantine unit etc. Please refer to the assessment form.

RESOURCES

1. Food processing and nutrition
2. https://www.betterhealth.vic.gov.au/health/healthyliving/food-processing-and-nutrition

FACULTY OF AGRICULTURE	
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO- FOOD PROCESSING
COURSE NAME:	PACKAGING AND LABELLING PROCESSED FOODS
COURSE CODE:	AFP PLP103S1
COURSE HOURS:	45 HOURS (45 Hours Theory)
CREDIT VALUE:	3
PREREQUISITES:	
YEAR/SEM.:	YEAR 1, SEMESTER 1
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DESCRIPTION

This course is designed to give students the knowledge, skills and aptitudes to carry out the functions involved in packaging and labeling of processed foods. The students will be exposed to the processes and technologies associated with the functions. The importance of packaging and labeling in food safety, security and the publics' health, marketing and profitability will be addressed.

LEARNING OUTCOMES AND INSTRUCTIONAL OBJECTIVES

Instructional objectives are for students to be able to:

1. Explain the importance of packaging and labeling in consumers protection, food safety and security.
2. Adhere to legal requirements
3. Carry out labeling of processed products
4. Operate packaging equipment
5. Design labels
6. Prepare nutritional information for label and packages
7. Identify types of packages

UNIT I: PACKAGING AND LABELLING PROCESSED FOODS 3 HOURS

Specific Objectives

Upon completion of this course, students are competent when they are able to:

- Explain the term food packaging and the needs for packaging foods
- Use labeling machine
- Identify the functions for packaging and labeling
- Identify types of packaging/packages and purposes
- Identify types of labels
- Reduce food packaging materials/activities
- Recycle food packaging
- Develop awareness of trends in food packaging

Content

To include but not limited to:

- Definition of Food packaging
- Needs for packaging:
  - Protection
  - Tamper resistance
  - Safety
  - Special physical
  - Chemical
  - Biological
  - Promotion
  - Shelf-life
  - Nutritional facets
  - Labeling
  - Information about food for sale
- Functions
  - Physical protection, Containment/Agglomeration, Marketing/Promotion, Convenience, Packaging Types, Barrier protection, Information Transmission, Security, Portion Control

- Levels:
  - Primary
  - Secondary
  - Tertiary
- Types of Packaging and Packages:
  - Aseptic processing
  - Trays
  - Flexible Packaging
  - Wrappers
  - Bags
  - Boxes
  - Car
  - Cartons
  - Pallets
- Factors Considerations:
  - Technical Capability, Technical Specifications, Labor Specifications, Integration to process Reliability Floor space, Flexibility (Charge-over materials, products),
  - Quality of outgoing packages through output efficiency, produce trinity ergonomics, Safety Conditions, Maintainability, Reliability, Serviceability, Capital Cost, maintenance cost, energy consumption, qualifications/specification (for foods, pharmaceuticals) time to market

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ASSESSMENT PROCEDURES

Students will take responsibility for their own academic achievement. Students will demonstrate their commitment to their own goal of educational advancement by attending class, completing assigned work, and complying with existing copyright legislations. To successfully complete this course, a student must pass ALL the different components of the course.

On-going Assessment Requirements			
No.	**Suggested Unit/Unit Cluster**	**Assessment Strategy**	**Weight**
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FEEDBACK

Students will be given rubrics and grading schemes within the first contact period of the course. Each student will also be given written and oral feedback. Feedback will be immediate and no longer than one week after a task is assessed. Feedback may be document on assessment evidence.

INSTRUCTIONAL METHODS

This course will be taught using a combination of formal lectures, discussions, role playing, case studies and presentations.

CAPSTONE EXPERIENCE DESCRIPTION

Students will prepare and host in class post-harvest loss assessment using different crops. Students will be peered to present on the topics that will be given during the course. Each student is expected to present to the audience for 15 minutes. Students will also be taken on field trips of packing house, Min. of Agriculture, Plant Quarantine unit etc. Please refer to the assessment form.

RESOURCES

Recommended Text (Optional)

1. Davis, C.G. Introduction to Packaging Machinery. Packaging Machinery Manufacturers Institute, Arlington, VA. 1997 (draft).

Recommended Reading

1. Brody, A.L. and Marsh, K.S. 1997. The Wiley Encyclopedia of Packaging Technology, Second Edition. John Wiley & Sons, Inc. New York, NY.
2. Luciano, R. 1995. How to Write Packaging Machinery Specifications. Institute of Packaging Professionals, Herndon, VA.
3. Pyzdek, T. 2001. The Six Sigma handbook. McGraw-Hill, NY.

4. Soroka, W. 1999. Fundamentals of Packaging Technology, Institute of Packaging Professionals, Herndon, VA.
5. Zepf, P.J. 1996. Improving Packaging Line Performance. Institute of Packaging Professionals, Herndon , VA

FACULTY OF AGRICULTURE	
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO-FOOD PROCESSING
COURSE NAME:	MAINTAINING FOOD SAFETY AND SECURITY SYSTEMS
COURSE CODE:	AFP SEC104S1
COURSE HOURS:	45 HOURS (45 Hours Theory)
CREDIT VALUE:	3
PREREQUISITES:	
YEAR/SEM.:	YEAR 1, SEMESTER 1
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DESCRIPTION

This course is designed to give students the knowledge, skills and aptitudes to maintain food safety and security systems. It will expose students to the relevant laws and regulations both applicable locally, regionally and internationally

LEARNING OUTCOMES AND INSTRUCTIONAL OBJECTIVES

Upon completion of this course students are competent when they are able to:

1. Recognize the importance of food safety and security to ensure public health
2. Recognize importance of food safety in world trade
3. Recognize the usefulness of the HACCP system as a food protection tool
4. Understand the importance of risk analysis in food safety and how risk analysis can be done in food industry.

UNIT I: INTERPRET THE ROLE OF GOVERNMENT AGENCIES IN FOOD SAFETY AND SECURITY 2 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

1.1 Identify the Agencies responsible for Food Safety and Security Regulations

1.2 Explain regulations and policies that relates to food security

1.3 Explain the role of local agencies in food regulation

1.4 Explain the role of local agencies in the disposal of agro-industrial waste

1.5 Interpret the Food Safety and Security Regulation

1.6 Adhere to the standards and procedures outlined in food regulation documents

Content

To include but not limited to:

- Food Regulation Agencies
- Food Policies
- Food Regulation Documents
- Agencies (local, regional and international)

UNIT II: APPLY KNOWLEDGE OF FOOD SAFETY AND SECURITY 4 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

2.1 Practice Personal Hygiene Standards

2.2 Evaluate Water Quality Issues

2.3 Analyze Food Safety and Security issues

2.4 Identify threats to Food Security

2.5 Monitor Control Measures and Points in food production

2.6 Adhere to Food Safety and Security Acts.

2.7 Determine ways of alleviating food insecurity

2.8 Determine actions to improve food safety and food security

Content

To include but not limited to:

3.1 Food Standards

3.2 Personal Hygiene

3.3 Water Quality Parameters

3.4 Food Security

3.5 Acts; JS317, ISO-22000, HACCP; other International Food standards

3.6 Water Quality Personal Hygiene

UNIT III: RESEARCH TRADE TO AGREEMENTS 2 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

3.1 Identify local, regional and international organizations that deals with Trade Agreements

3.2 Identify ways in which trade disputes can be handled

3.3 Research Trade Regulations for specific products entering and leaving Jamaica

3.4 Apply regulations to agro food industry

3.5 Analyze food data for agro-processing.

Content

To include but not limited to:

- Trade Organizations
- Trade Agreements
- Trade Regulations
- Requirements for inflow and outflow of specific products

UNIT IV: DETECT AND CONTROL FOOD SAFETY HAZARDS 4 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

4.1 Detect Food Safety Hazards

4.2 Control of Food Hazards

4.3 Analyze incidents of Food Contamination

4.4 Use Personal Protective Equipment while processing foods

4.5 Apply Sanitary Food Handling practices in processing foods

4.6 Apply Food Safety Standards of the Food Industry

4.7 Explain the Role of Management in Food Safety and Security

Content

To include but not limited to:

- Food Safety Hazards
- Contamination
- Personal Protective Equipment (PPEs)
- Food Handling Techniques
- Food Safety Standards

UNIT V: IMPLEMENT QUALITY CONTROL IN FOOD PROCESSING 4 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

5.1 Complete Quality Control documents

5.2 Use Quality Control Equipment

5.3 Perform Quality Control Tests on products

5.4 Conduct Sensory Analysis of finished products

5.5 Analyze Statistical Quality Control Charts

5.6 Implement Quality Control Procedures

Content

To include but not limited to:

- Quality Control Documents
- Quality Control Equipment
- Sensory Analysis
- Statistical Quality Control
- Types of Tests

- Quality Control Procedures

UNIT VI: IMPLEMENT QUALITY MANAGEMENT SYSTEMS 4 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

6.1 Identify the various quality management systems

6.2 Implement Quality management Systems

6.3 Research quality management systems that comply with industry standards local, regional and international

6.4 Develop a Quality Management Plan

6.5 Use Quality Management Tools

Content

To include but not limited to:

- Total Quality Management (TQM)
- Quality Management Tools
- Quality Management Systems
- Quality Management Plan

UNIT VII: TRAIN AND SUPERVISE STAFF 6 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

7.1 Develop a plan to train workers in the food industry

7.2 Conduct Training Sessions with Workers

7.3 Conduct orientation of new workers

7.4 Apply Conflict Resolution Techniques

7.5 Identify the need for worker retraining

7.6 Supervise workers effectively

7.7 Delegate tasks appropriately

7.8 Evaluate workers' Performance

7.9 Maintain regulatory standards and discipline

Content

To include but not limited to:

- Conflict Resolution Techniques
- Regulatory Standards
- Methods of Effective Supervision
- Conducting Effective training Sessions
- Performance Evaluation

UNIT VIII: CONDUCT COST ANALYSIS 2 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

8.1 Calculate the cost of manufacturing a product

8.2 Price products to ensure profitability

8.3 Implement cost reduction strategies

Content

To include but not limited to:

- Product costing
- Cost Reduction Strategies
- Profit and Loss
- Break Even

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ASSESSMENT PROCEDURES

Students will take responsibility for their own academic achievement. Students will demonstrate their commitment to their own goal of educational advancement by attending class, completing assigned work, and complying with existing copyright legislations. To successfully complete this course, a student must pass ALL the different components of the course.

On-going Assessment Requirements			
No.	**Suggested Unit/Unit Cluster**	**Assessment Strategy**	**Weight**
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3	**VI, VII, VIII**	Field/Laboratory/Practical Activities	40%
4	**IX, X**	Final examination	20%
Total			**100%**

FEEDBACK

Students will be given rubrics and grading schemes within the first contact period of the course. Each student will also be given written and oral feedback. Feedback will be immediate and no longer than one week after a task is assessed. Feedback may be document on assessment evidence.

INSTRUCTIONAL METHODS

This course will be taught using a combination of formal lectures, discussions, case studies, practical demonstrations and presentations.

CAPSTONE EXPERIENCE DESCRIPTION

Students will work in groups to develop a food safety plan.

Students will also be required to a research paper on the various trade Agreements and submitted on or before stipulated due date. Practical demonstrations will also be done by students on quality control. Students will also be taken on field trips to Food Storage and prevention of infestation division and Food Quarantine Division following which a report must be submitted.

RESOURCES

Recommended Text & Readings

1. HACCP: A Practical Approach, 3rd Ed. (Mortimore and Wallace), Springer • Food Industry Quality Control Systems (Clute), CRC
2. HACCP Implementation in Food Manufacturing: A Practical Guide (Kindle Ed.) • BRC Standards Issue 6 Quality Manual Pack (Kindle Ed.)
3. ISO 22000 Food Safety Management Quality Manual Pack (Kindle Ed.)

FACULTY OF AGRICULTURE	
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO-FOOD PROCESSING
COURSE NAME:	MAINTAINING SANITATION AND HYGIENE
COURSE CODE:	AFP MSH105S1
COURSE HOURS:	45 HOURS (45 Hours Theory)
CREDIT VALUE:	3
PREREQUISITES:	NONE
YEAR/SEM.:	YEAR 1, SEMESTER 1
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DESCRIPTION

This course will provide students with information on basic microbiology, food safety, personal hygiene, food hygiene and the general handling of foods and sanitation maintenance. Local, Regional and International legislations and conventions for the food processing sector.

LEARNING OUTCOMES AND INSTRUCTIONAL OBJECTIVES

Upon completion of this course students are competent when they are able to:

1. Explain how contamination of food can occur in a food service establishment.
2. Determine the effect and consequences of food borne illness.
3. Adhere to practices to prevent the food poisoning.
4. Apply measures and procedures to reduce and/or eliminate accidents in food production and service areas.
5. Apply policies on personal hygiene and work place sanitation
6. Adhere to safety rules, legislations and regulations for the food processing sector.
7. Detect the causes of food poisoning

8. Adhere to procedures for the prevention of food poisoning.
9. Maintain sanitation and hygiene practices

UNIT I: EVALUATE FOOD HANDLING PRACTICES AND CAUSES OF FOODBOURNE ILLNESSES 4 HOURS

Specific Objectives

1.1 Upon completion of this unit, students are competent when they are able to:
1.2 Explain the concept/idea of food safety to other food handlers/employees/customers
1.3 Discuss the types of hazards involved in food preparation
1.4 Identify the challenges to food safety in their particular kind of food business operation
1.5 Identify the factors that influence the growth of micro-organisms
1.6 Explain what is meant by the "temperature danger zone" in food safety
1.7 Identify the kinds of food borne illness that may result from unsafe food handling

Content

To include but not limited to:

Food safety practices

- Persons: food handlers, employees, customers, suppliers
- Hazards linked with food preparation, storage, transportation, disposals
- Factors impacting growth of micro-organisms
- Temperature danger zone
- Foodborne illnesses
- Sources of foodborne illnesses
- Regulations and legislations

UNIT II: PRACTICE PERSONAL HYGIENE AND FOOD SAFETY 4 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

2.1 Identify the types of micro- organisms found on the human body that may cause food contamination
2.2 Explain the impact of poor personal hygiene on food safety

2.3 Apply practices of personal hygiene appropriately to safe food handling

2.4 Identify and prevent persons with certain communicable diseases and or health conditions from the food preparation and restaurant service areas

2.5 Follow organization's policy in reporting in illnesses impact able on the processing of foods

2.6 Determine the costs impact of poor personal hygiene and poor food safety on the food processing operations

Content

To include but not limited to:

- Types of micro-organisms
- Sources of food contaminations
- Good personal hygiene practices
- Good food safety practices
- Organization's policies
- Public health practices
- Communicable illnesses

UNIT III: APPLY SANITATION PRACTICES FOR PURCHASING AND RECEIVING FOODS 4 HOURS

Specific Objectives

3.1 Upon completion of this unit, students are competent when they are able to:

3.2 Identify the characteristics of safe food sources

3.3 Explain in the importance of good sanitation practices in the selection and purchasing of foods

3.4 Follow organization's policy or industry standards in receiving of foods/food products

3.5 Adjust receiving schedules in keeping with food safety requirements

3.6 Explain the importance of keeping food processed in a sanitized environment

3.7 Explain the safety implications of "critical dates"

Content

To include but not limited to:

- Sources of safe foods
- Expiry date, use by date, best by date
- Purchasing and receiving procedures
- Characteristics of safe foods

UNIT IV: APPLY SAFE FOOD STORAGE PRACTICES 4 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

4.1 Explain the importance of safe food storage practices

4.2 Identify types of food storage and determine their distinguishing characteristics

4.3 Maintain safe-zone temperatures for raw and cooked foods

4.4 Follow procedures to store chemicals safely

4.5 Follow procedures to store food handling equipment and utensils

4.6 Determine low cost storage strategies

Content

To include but not limited to:

- Types of food storage
- Characteristic of storage
- Safe temperature zone
- Storage of chemical
- Storage of equipment and utensils
- Storage costs strategies

UNIT V: USE FREEZING, THAWING AND REHEATING PRACTICES FOR FOODS 4 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

5.1 distinguish between the methods of cooking and reheating

5.2 practice safe reheating of foods

5.3 practice safe methods of thawing foods

5.4 practice safe freezing of foods

Content

The content will include but not limited to:

- Methods of freezing
- Methods of thawing
- Methods reheating

UNIT VI: CLEANING AND SANITIZING METHODS FOR FOOD SAFETY 4 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

6.1 Differentiate the terms cleaning and sanitizing

6.2 Explain the term food contact surface

6.3 Use the types of cleaning agents and sanitizers for safe use a food handling operation implement cleaning and sanitation schedule

6.4 Use the '3 Sink Principles" to clean and sanitize based on the "3 sink principle"

6.5 Select and use cleaning agents and sanitizers.

6.6 store cleaning and sanitizing chemicals s

6.7 Store cleaned and sanitized items.

Content

To include but not limited to:

- Types of cleaning methods
- Types of sanitization methods
- "3Sink Principles"
- Types of sanitizers
- Types of cleaning chemicals
- Safety procedures

UNIT VII: APPLY PRINCIPLES OF HACCP 5 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

7.1 Explain the term HACCP

7.2 Explain the preparation and production processes for selected foods

7.3 Create a basic flow chart for the production food processed

7.4 Use safe methods for tasting, touching and smelling foods

7.5 Identify and eliminate types of hazards.

7.6 Use the HACCP stages to identify hazards.

7.7 Distinguish between a "control point" and a "critical control point"

7.8 Identify the critical control points in the "production flow" for a specific finished products

7.9 Follow basic Health Services Regulations for production of processed foods

7.10 Determine the impact of HACCP on the traditional methods of food purchasing, storage and preparation

7.11 Interpret the roles of the regulatory bodies in implementing HACCP

Content

To include but not limited to:

- HAACP Principles
- Ministry of Health, Bureau of Standards of Jamaica, National Standards Institute
- Types of hazards
- Critical Control Points
- Tasting Methods
- Smelling Methods
- Touching Methods,
- Flow Charts
- HAACP Certification

UNIT VIII: MANAGE WASTE DISPOSAL 3 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

8.1 Define the term waste disposal management

8.2 Explain the different types and sources of wastes

8.3 Identify the characteristics/properties of types of wastes

8.4 Use Waste management policies/procedures for storage and disposal of types of wastes

8.5 Explain the impact of poor and improper waste disposal on the environment

8.6 Follow suitable methods of solid and liquid waste disposal

8.7 Comply with organization policy and waste management regulations

8.8 Determine the impact of poor waste disposal on food safety and restaurant operation

8.9 Identify potential hazards of improper waste disposal management

Content

To include but not limited to:

- Environmental impact
- Waste management regulations national agencies responsible for waste management
- Methods storage and disposal of types of waste
- Types of wastes
- Methods of conversion of waste to productive uses

UNIT IX: MAINTAIN WORKPLACE SAFETY 3 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

9.1 Follow local legislations dealing with workplace safety

9.2 Interpret and apply company policy on workplace safety

9.3 Explain the types of accidents likely at the workplace

9.4 Identify causes of accidents and incidents.

9.5 Implement preventative measures in keeping with company policy

9.6 Carryout approved procedures in the event of an accident

9.7 Follow procedures to report an accident or incident

9.8 Maintain safe work environment

9.9 Facilitate reduction of safety costs

Content

To include but not limited to:

- Workplace policies
- Safety procedures
- Legislations
- Accident prevention
- Preparing accidents/incident reports
- Costs implications

UNIT X: PREVENT FIRES 3 HOURS

Specific Objectives

Upon completion students are competent when they are be able to:

10.1 Follow local fire regulations.

10.2 Follow company fire prevention policy and procedures

10.3 Identify the types of fires and their sources

10.4 Follow procedures to prevent fires

10.5 Follow procedures for outing types of fires

10.6 Select and use appropriate firefighting equipment, tools and or solutions

10.7 Follow fire drill procedures.

10.8 Carryout procedures to be followed in event of a fire.

10.9 Report incidents of fires in keeping company policy

10.10 Make call to fire stations

Content

To include but not limited to:

- Fire regulations
- Company policy
- Firefighting equipment, gears, tools solutions
- Role of fire station

- Fire prevention strategies/procedures
- Types of fires and their sources
- Methods for eliminating types of fires

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ASSESSMENT PROCEDURES

Students will take responsibility for their own academic achievement. Students will demonstrate their commitment to their own goal of educational advancement by attending class, completing assigned work, and complying with existing copyright legislations. To successfully complete this course, a student must pass ALL the different components of the course.

On-going Assessment Requirements			
No.	**Suggested Unit/Unit Cluster**	**Assessment Strategy**	**Weight**
1	**I, II, III,**	Group Project	10%
2	**IV, V**	Mid-term Test	15%
3	**VI, VII, VIII**	Three Practical Assessments	15%
4	**IX, X**	Final Examination	60%
Total			**100%**

FEEDBACK

Students will be given rubrics and grading schemes within the first contact period of the course. Each student will also be given written and oral feedback. Feedback will be immediate and no longer than one week after a task is assessed. Feedback may be document on assessment evidence.

INSTRUCTIONAL METHODS

This course will be taught using a combination of formal lectures, discussions, role playing, case studies and presentations.

CAPSTONE EXPERIENCE DESCRIPTION

Students will prepare and carry through a role plays to demonstrate knowledge, attitude and skills gathered through the semester.

FACULTY OF AGRICULTURE	
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO- FOOD PROCESSING
COURSE NAME:	APPLIED FOUNDATION COMMUNICATIONS I
COURSE CODE:	GED COM101S1
COURSE HOURS:	45 HOURS (45 Hours Theory)
CREDIT VALUE:	3
PREREQUISITES:	NONE
YEAR/SEM.:	YEAR 1, SEMESTER 1
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DESCRIPTION

This course is designed to encourage and assist the student in developing standard communication and presentation skills that are important to and necessary in the Industry.

LEARNING OUTCOMES AND INSTRUCTIONAL OBJECTIVES

1. Upon completion of this course, students will be able to develop an appreciation of the English Language and be able to use the language in their work environment effectively.
2. Upon successful completion of this course, the learner will be competent when they are able to:
3. Demonstrate the use of open and closed questions
4. Identify their behavioral styles and the challenges associated with them
5. Describe a model of feedback, communication and listening
6. Organize information in a clear and concise manner in writing and speech
7. Create a positively impactful introduction, inclusive of dress choices
8. Implement techniques for varying tones, pitch and body language
9. Use/employ on their communications skills to the fullest effect

10. Demonstrate the fundamentals of public speaking and effective presentations

UNIT I – THE COMMUNICATION PROCESS 9 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

1.1. Name the elements of the communication process

1.2. Describe the communication process

1.3. Identify the barriers to communication

1.4. Apply the forms of communication to everyday life

Content

- To include but not limited to:
- Elements of communication
- The communication process
- Barriers to effective communication
- Forms of communication

UNIT II: BUILD PERSONAL CREDIBILITY, UNDERSTAND DIFFERENT COMMUNICATION STYLES 6 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

2.1. Discuss types of sentences, phrases and clauses

2.2. Identify main ideas

2.3. Understand idea linkages

2.4. Practice improving his/her content and delivery

Content

To include but not limited to:

- Types of sentences, phrases and clauses
- Main ideas
- Idea linkages

- Language usage – Figurative, Rhetorical
- How to improve content and delivery

UNIT III: APPLY LISTENING TECHNIQUES 12 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

3.1 Focus on the speaker

3.2 Identify details

3.3 Empathize with what is being said

3.4 Analyze and respond to the speaker

3.5 Identify and address the major barriers to effecting listening.

Content

To include but not limited to:

- How messages are sent and received
- Identifying details
- Word choice, idioms and cliché
- Tone and allusion
- Determining speaker intent
- Denotation and connotation
- Conversion from direct to indirect speech and vice versa
- Listening techniques
- Deciphering what is important and less important

UNIT IV: SPEAK AND WRITE CORRECTLY 9 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

4.1 Communicate with guests and coworkers easily and effectively using Standard English

4.2 Demonstrate note-taking techniques

4.3 Complete precise writing exercises

4.4 Discuss figures of speech

Content

To include but not limited to:

- The parts of speech
- Correct use of pronouns
- Comparison of adjectives
- The function of words
- Precise writing and note-taking
- Figures of speech, idioms, metaphors, similes, etc.

UNIT V: COMMUNICATE, INFLUENCE AND INSPIRE 6 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

5.1 Select the correct words and phrases for directness and simplicity

5.2 Identify 'power' words and phrases

5.3 Create simple sentences and phrases commonly used in the industry to satisfy customers

Content

To include but not limited to:

- Communication Principles
- Techniques for Influencing
- Techniques for Inspiring

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ASSESSMENT PROCEDURES

Students will take responsibility for their own academic achievement. They will demonstrate their commitment to attend classes, completing assignments and complying with the institutional/examination policies. To successfully complete this courses, students must pass ALL of the different components of course.

On-going Assessment Requirements			
No.	**Suggested Unit/Unit Cluster**	**Assessment Strategy**	**Weight**
1	**I, II, III,**	Course Work	40%
2	**IV, V**	Practical Assignments/Projects	20%
3	**VI, VII, VIII**	Final Assessment	40%
4	**IX, X**		20%
Total			**100%**

FEEDBACK

Students will be given rubrics and grading schemes within the first contact period of the course. Each student will also be given written and oral feedback. Feedback will be immediate and no longer than one week after a task is assessed. Feedback may be document on assessment evidence.

INSTRUCTIONAL METHODS

This course will be taught using a combination of formal lectures, discussions, role playing, case studies and presentations

CAPSTONE EXPERIENCE DESCRIPTION

Student will be given a major piece of assignment involving the principles of the course

RESOURCES

1. Required: Communicating Today: The Essentials Zeuschner, Raymond. (2003).California State University Pearson Education, Inc.
2. Critical Thinking and Everyday Argument, Verlinden, Jay wadsworth, (2005) Cengage learning

COURSE OUTLINES

YEAR 1

SEMESTER 2

FACULTY OF AGRICULTURE	
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO- FOOD PROCESSING
COURSE NAME:	PROVIDING CUSTOMER SERVICE
COURSE CODE:	AFP CS101S2
COURSE HOURS:	45 HOURS (45 Hours Theory)
CREDIT VALUE:	3
PREREQUISITES:	NONE
YEAR/SEM.:	YEAR 1, SEMESTER 2
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DESCRIPTION

This course will focus on developing awareness of the importance of customer service to the success of the Agro-Food Processing Sector. It aims at developing skills, knowledge, attitudes, and thinking skills needed to build and maintain customer s' loyalty.

LEARNING OUTCOMES AND INSTRUCTIONAL OBJECTIVES

Instructional objectives are for students to be able to:

Upon completion of this course students are competent when they are able to : create an appreciation of the importance of quality customer care for customers (internal and external) assist in improving quality customer service techniques , develop attitudes to quality service delivery, create and add value, respect of people at all levels of the organization, management and customers.

Upon successful completion of this course, students are competent when they are able to:

1. Understand the importance of customer service to the business
2. Explain the ways in which customer standards improve the quality of service
3. Demonstrate interpersonal skills necessary for the delivery of quality customer service
4. Apply conflict resolution techniques

5. Solve customer complaints
6. Follow professional codes of conduct to enhancement of quality customer care
7. Interpret and follow customer service policies
8. Provide quality customer service

UNIT I: DEVELOP KNOWLEDGE OF THE CUSTOMER 6 HOURS

Specific Objectives

Upon successful completion of this unit, students are competent when they are able to:

1.1. Provide excellent customer service
1.2. Handle different types of customers
1.3. Distinguish between internal and external customers
1.4. Identify the fundamental needs of customers
1.5. Determine the major factors customers use to "RATE" service quality
1.6. Identify components of the customer's "Bill of Rights"
1.7. Determine the characteristics of the types of customers
1.8. Use customer profile to address particular needs

Content

To include but not limited to:

- Characteristics of quality customer service
- Identify mediocre customer service
- Types of customers and their characteristics/profiles
- Internal vs. external customers
- Fundamental needs of customers
- Major factors used to RATE service quality
- Customers' "Bill of Rights"

UNIT II DEVELOP CUSTOMER LOYALTY 9 HOURS

Specific Objectives

Upon successful completion of this unit, students are competent when they able to:

2.1. Define the term "customer loyalty"

2.2. Listen to and address the customers concerns

2.3. Follow the processes and procedures in delivering quality customer service

2.4. Explain the impact of "total quality focus" on customer loyalty

2.5. Apply proactive approaches to build customer loyalty

2.6. Explain how customer loyalty impacts the organizations' development and profitability

Contents

To include but not limited to:

- Total quality focus
- Definition of customer loyalty
- Total quality focus
- Proactive approaches to customer contact
- Impact on customer loyalty

UNIT III: PRACTICE GOOD ATTITUDES AND HABITS FOR CUSTOMER SERVICE 6 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

3.1 Determine the effects of poor "attitude" on quality customer service

3.2 Develop effective habits and attitudes towards quality service

3.3 Explain the advantages of good attitudes to:

- The service provider
- The customers
- The organization

3.4 Follow approved procedures for interacting with customers

3.5 Provide service to customers that builds repeat business

.

Content

To include but not limited to:

- Definition of "attitude"
- Definition of "habit"
- Characteristics of positive and negative attitudes
- Behavior patterns impacting quality customer service
- Advantages of a good attitude
- Body language
- Factors affecting customers' loss

UNIT IV: DEAL WITH DIFFICULT CUSTOMERS 9 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

4.1 Identify major reasons why customers get upset/make complaints
4.2 Apply procedures to deal with types of difficult customers
4.3 Analyze outcomes from the service encounter with difficult customers
4.4 Explain the conceptual framework of service recovery and fallout
4.5 Implement strategies to address customer dissatisfaction/service recovery and fallout
4.6 Follow approved procedures to handle customers' complaints
4.7 Distinguish between "listening" and "hearing"
4.8 Explain the importance of listening to customers in the delivery of quality customer service
4.9 Apply steps to listening to and provide feedback to customers
4.10 Identify the strategies for effective listening/active listening
4.11 Use the seven-step (7-step) Customer Complaints Resolution Model
4.12 Refer unresolved issues with difficult customers to appropriate authority level

Content

To include but not limited to:

- Dissatisfied customers
- Difficult customers
- Service encounter
- Service recovery and fallout procedures
- Strategies addressing customer dissatisfaction, service recovery and fallout

- Handling customer complaints
- Listening vs. hearing
- Importance of listening to difficult customers
- Good listening skills

UNIT V: DEVELOP AND PROJECT PROFESSIONAL IMAGE 6 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

5.1. Interpret the term "professionalism"
5.2. Demonstrate professionalism at the workplace and off the job
5.3. Acquire opportunities to improve and maintain professional competencies
5.4. Apply guidelines to develop professionalism at the workplace
5.5. Encourage and support the professional development of staff and other colleagues
5.6. Participate in professional development activities of the organization
5.7. Join and participate in professional organization
5.8. Read professional publications to update industry knowledge
5.9. Acquire and maintain professional certifications

Content

To include but not limited to:

- Definition of "professionalism"
- Professional Organizations
- Professional development organizations and opportunities
- Professionalism at work
- Delivering professional services
- Professional Publications
- Strategies for providing professional services
- Professional Certifications

UNIT VI: PARTICIPATE IN TEAMWORK 6 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they able to:

6.1 Lead and develop work teams

6.2 Explain the role of teamwork in attaining organization's goals

6.3 Identify the advantages of teamwork

6.4 Explain the disadvantages of poor teamwork

6.5 Identify the components of great teamwork

6.6 Use teamwork in the delivery of quality customer care

Content

To include but not limited to:

- Definition of "teamwork"
- The role of teamwork in building relations
- Advantages and disadvantages of teamwork
- Components of great teamwork
- Importance of teamwork in the delivery of customer care
- Traits of a good team leader

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ASSESSMENT PROCEDURES

Students will take responsibility for their own academic achievement. Students will demonstrate their commitment to their own goal of educational advancement by attending class, completing assigned work, and complying with existing copyright legislations. To successfully complete this course, a student must pass ALL the different components of the course.

On-going Assessment Requirements			
No.	**Suggested Unit/Unit Cluster**	**Assessment Strategy**	**Weight**
1	**I, II, III,**	Two in-course tests	20%
2	**IV, V**	Practical Assignments/Projects	20%
3	**VI, VII, VIII**	Field/Laboratory/Practical Activities	40%
4	**IX, X**	Final Assessment	20%
Total			**100%**

FEEDBACK

Students will be given rubrics and grading schemes within the first contact period of the course. Each student will also be given written and oral feedback. Feedback will be immediate and no longer than one week after a task is assessed. Feedback may be document on assessment evidence.

INSTRUCTIONAL METHODS

This course will be taught using a combination of formal lectures, discussions, role playing, case studies and presentations.

CAPSTONE EXPERIENCE DESCRIPTION

Students will prepare and host in class post-harvest loss assessment using different crops. Students will be peered to present on the topics that will be given during the course. Each student is expected to present to the audience for 15 minutes. Students will also be taken on field trips of packing house, Min. of Agriculture, Plant Quarantine unit etc. Please refer to the assessment form.

RESOURCES

1. Practical Guide (Kindle Ed.) • BRC Standards Issue 6 Quality Manual Pack (Kindle Ed.) • ISO 22000 Food Safety Management Quality Manual Pack (Kindle Ed.)

FACULTY OF AGRICULTURE	
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO-FOOD PROCESSING
COURSE NAME:	ENTREPRENEURSHIP & BUSINESS DEVELOPMENT
COURSE CODE:	AFP ENTR102S2
COURSE HOURS:	45 HOURS (45 Hours Theory)
CREDIT VALUE:	3
PREREQUISITES:	NONE
YEAR/SEM.:	YEAR 1, SEMESTER 2
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DESCRIPTION

This module is designed to actively engage students in their career development to pursue self-employment opportunities through crafting of entrepreneurial strategies.

LEARNING OUTCOMES AND INSTRUCTIONAL OBJECTIVES

Upon completion of this course, students will be introduced to entrepreneurial strategies in the operation of small businesses. The essentials of starting a small business from the generation of an idea through the actual operations will be examined.

Upon successful completion of this course, students competent when they are able to:

1. Employ entrepreneurial strategies to create business ventures
2. Apply the concepts and practices of business planning.
3. Develop a financial plan for a small business.
4. Interpret financial statements of a small business.
5. Conduct market research/feasibility study.
6. Prepare a business Plan for a new venture.

7. Distinguish between Sole Trader and Partnership

UNIT I: USE PARAMETERS AND CONCEPTS OF BUSINESS VENTURES 6 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

1.1 Explain the differences between sole proprietorship and partnership

1.2 Source Venture Capital

Content

Should include but not limited to:

- Sole Proprietorship
- Partnership
- Venture Capital

UNIT II: CONDUCT FEASIBILITY STUDIES 8 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

2.1 Identify the components of a needs analysis

2.2 Discuss general market characteristics

2.3 Identify the components of a site evaluation

2.4 Explain the concept of supply and demand

2.5 Discuss characteristics of capital investment

2.6 Identify various financing methods

Content

To include but not limited to:

- Needs analysis
- General market characteristics
- Site evaluation
- Supply and demand analysis
- Capital investment

- Financing methods

UNIT III: PREPARE BUDGETS 6 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

3.1. Explain the budget cycle

3.2. Identify the long vs. short term budget

3.3. Explain an operating budget

3.4. Explain a fixed budget

Content

To include but not limited to:

- Cycle
- Long term/short term
- Operating budget
- Fixed budget

UNIT IV: PREPARE FINANCIAL STATEMENTS 8 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

4.1 Identify and prepare in detail:

a. The income statement

b. The balance sheet

c. The statement of changes in financial position

4.2 Differentiate between organizational costs and organizational expenses

4.3 Interpret financial statements through the process of ratio analysis

4.4 Illustrate and translate break-even analysis given specified criteria

4.5 Conclude the business decision-making process given specified criteria from various financial statements

4.6 Grants

4.7 Fiscal Incentives

Content

To include but not limited to:

- Financial Statements

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ASSESSMENT PROCEDURES

Students will take responsibility for their own academic achievement. Students will demonstrate their commitment to their own goal of educational advancement by attending class, completing assigned work, and complying with existing copyright legislations. To successfully complete this course, a student must pass ALL the different components of the course.

On-going Assessment Requirements			
No.	**Suggested Unit/Unit Cluster**	**Assessment Strategy**	**Weight**
1	**I, II, III,**	Two in-course tests	20%
2	**IV, V**	Practical Assignments/Projects	20%
3	**VI, VII, VIII**	Field/Laboratory/Practical Activities	40%
4	**IX, X**	Final Assessment	20%
Total			**100%**

FEEDBACK

Students will be given rubrics and grading schemes within the first contact period of the course. Each student will also be given written and oral feedback. Feedback will be immediate and no longer than one week after a task is assessed. Feedback may be document on assessment evidence.

INSTRUCTIONAL METHODS

This course will be taught using a combination of formal lectures, discussions, role playing, case studies and presentations.

CAPSTONE EXPERIENCE DESCRIPTION

Students will prepare and host in class post-harvest loss assessment using different crops. Students will be peered to present on the topics that will be given during the course. Each student is expected

to present to the audience for 15 minutes. Students will also be taken on field trips of packing house, Min. of Agriculture, Plant Quarantine unit etc. Please refer to the assessment form.

RESOURCES

FACULTY OF AGRICULTURE	
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO-FOOD PROCESSING
COURSE NAME:	BUILDING AND MAINTAINING QUALITY IN FOOD PROCESSING
COURSE CODE:	AFP QUAL104S2
COURSE HOURS:	45 HOURS (45 Hours Theory)
CREDIT VALUE:	3
PREREQUISITES:	NONE
YEAR/SEM.:	YEAR 1, SEMESTER 2
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DESCRIPTION

This course is designed to give students the knowledge, skills and attributes to build and maintain a quality focused organization. It will expose students to quality management systems, quality assurance system, quality control systems, the principles on which each system is built, the economic benefits of quality and process improvement strategies.

LEARNING OUTCOMES AND INSTRUCTIONAL OBJECTIVES

Upon completing this course, students are competent when they are able to:

1. Evaluate the impact of quality on organization culture
2. Adhere to Control Quality Policies and Procedures
3. Build quality organization culture
4. Implement Quality Process Improvement Systems
5. Develop Quality Management Systems
6. Develop Quality Assurance Systems
7. Develop Quality Control Systems

8. Monitor Quality Systems
9. Take Corrective Actions
10. Manage Organizational Risk

UNIT I: BUILD AND MAINTAIN QUALITY CULTURE 3 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

1.1 Explain the importance of building and maintain a quality focused organization.
1.2 Determine the impact of quality on organization growth and economic stability
1.3 Identify the features of the quality characteristics matrix.
1.4 Adhere to policies and procedures to attain quality objectives
1.5 Use quality to build organization effectiveness and productivity
1.6 Use quality to create and maintain customer loyalty
1.7 Determine the payoff of a quality culture.
1.8 Use team work to build and maintain quality culture
1.9 Apply business ethics to enhance quality culture

Content

To include but not limited to:

- Definition of quality
- Quality matrix characteristics
  - Tangible
  - Intangible
  - Product
  - Service
  - Processes
- Economic and Growth

UNIT II: MAINTAIN QUALITY CONTROL 6 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to Assign and coordinate work

2.1 Explain the importance of quality control

2.2 Identify features of quality control system

2.3 Compare and Contrast quality control versus quality assurance

2.4 Identify types of risks/hazards to be monitor and control

2.5 Implement procedure for quality control

2.6 Establish and implement monitoring schedules

2.7 Determine factor impacting on quality control.

2.8 Orientate staff of all level to quality control and quality assurance systems

2.9 Train staff in quality control system

2.10 Guide staff to their roles in the management of quality outcomes.

Content

To include but not limited to:

- Importance of Quality Control
- Quality Control System
- Factors impacting quality Control
- Train/Orientation
- Staff Roles
- Quality Assurance
- Risks and Hazards
- Quality Control Schedules.
- Total Quality Management (TQM)

UNIT III: APPLY QUALITY ASSURANCE SYSTEM TO PROCESS 3 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

3.1 Explain the purpose of Quality Assurance

3.2 Identify the characteristics of a quality assurance systems

3.3 Determine the impact and benefits of quality assurance on organization performance

3.4 Implement quality assurance systems to work procedures/processes.

3.5 Document and report quality assurance

3.6 Identify on compliances and recommend schedules

3.7 Monitor risks and recommend corrective actions

3.8 Apply quality assurance procedures to product.

3.9 Prepare and present reports using Standard English

3.10 Train staff in quality assurance process

Content

To include but not limited to:

- Quality Assurance principles/process
- Characteristics
- Impacting factors
- Report Presentation
- Types of Corrective Actions
- Types of Risks rating
- Staff Training/Orientation
- ISO Quality Management Systems

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ASSESSMENT PROCEDURES

Students will take responsibility for their own academic achievement. Students will demonstrate their commitment to their own goal of educational advancement by attending class, completing assigned work, and complying with existing copyright legislations. To successfully complete this course, a student must pass ALL the different components of the course.

On-going Assessment Requirements			
No.	**Suggested Unit/Unit Cluster**	**Assessment Strategy**	**Weight**
1	**I, II, III,**	Two in-course tests	20%
2	**IV, V**	Practical Assignments/Projects	20%

3	**VI, VII, VIII**	Field/Laboratory/Practical Activities	40%
4	**IX, X**	Final Assessment	20%
Total			**100%**

FEEDBACK

Students will be given rubrics and grading schemes within the first contact period of the course. Each student will also be given written and oral feedback. Feedback will be immediate and no longer than one week after a task is assessed. Feedback may be document on assessment evidence.

INSTRUCTIONAL METHODS

This course will be taught using a combination of formal lectures, discussions, role playing, case studies and presentations.

CAPSTONE EXPERIENCE DESCRIPTION

Students will prepare and host in class post-harvest loss assessment using different crops. Students will be peered to present on the topics that will be given during the course. Each student is expected to present to the audience for 15 minutes. Students will also be taken on field trips of packing house, Min. of Agriculture, Plant Quarantine unit etc. Please refer to the assessment form.

RESOURCES

Recommended Text

1. HACCP: A Practical Approach, 3rd Ed. (Moltimore and Wallace), Springer
2. Food Industry Quality Control Systems (Clute), CRC
3. HACCP Implementation in Food Manufacturing: A Practical Guide (Kindle Ed.)
4. BRC Standards Issue 6 Quality Manual Pack (Kindle Ed.)
5. ISO 22000 Food Safety Management Quality Manual Pack (Kindle Ed.)

FACULTY OF AGRICULTURE	
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO-FOOD PROCESSING
COURSE NAME:	APPLIED COMMUNICATION SKILLS II
COURSE CODE:	AFP ACOM103S2
COURSE HOURS:	45 HOURS (45 Hours Theory)
CREDIT VALUE:	3
PREREQUISITES:	USING COMMUNICATIONS SKILLS IS
YEAR/SEM.:	YEAR 1, SEMESTER 2
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DESCRIPTION

This course aims to enhance students' communicative competence in the world of work. It includes a detailed look at the communication process, examining the intricacies of technical writing and promotes critical thinking skills that will allow the individual to engage in informative discourse that would be beneficial to their field of expertise and by extension the wider society.

LEARNING OUTCOMES AND INSTRUCTIONAL OBJECTIVES

Upon completion of this course, students will be able to express themselves lucidly in their specialized areas and the communication course will help them to master the art of written and utterances objectively. The course also aims at underscoring the value of good writing and speaking in general, which is based on a healthy attitude towards effective communication.

Upon successful completion of this course, the learner will be competent when they are able to:

1. Communicates clearly, concisely and correctly within the requirements of the environment and context;
2. Responds to written, spoken or visual messages in a manner that ensures effective communication;
3. Makes independent choices and solves routine communication problems with keen attention to ethical practices
4. Demonstrates tolerance and temperance when interacting with others
5. Empathizes and makes informed decisions

UNIT I: USE ORGANIZATIONAL COMMUNICATION SYSTEMS 15 HOURS

Specific Objectives

Upon successful completion of this unit, students are competent when they are able to:

1.1 Explain the importance of ethical behavior in communicating

1.2 Assess own role in workplace communication

1.3 Explain the importance of communication flow within an organization

1.4 Demonstrate sensitivity to diverse audience when communicating

1.5 Use Communication Systems and Procedures

1.6 Interpret Communication Policies

Content

To include but not limited to:

- Copyright /intellectual property (digital, print, audio)
- Use of company property for personal use (photocopier, printer, computer, phone, stationery, social media accounts, etc.)
- Collection, storage, retrieval and disposal of confidential information
- Interpersonal abuse (physical violence, sexual harassment, emotional abuse, abuse of one's position, racism, and sexism)
- External communication – purpose, advantages and disadvantages of
- (Networking, negotiating, sharing of ideas)

- Internal communication – purpose, advantages and disadvantages of (Hierarchy, downward flow, upward flow, lateral/horizontal communication, diagonal communication, grapevine/informal communication)
- The rights of individual/groups to religious, ethnic, political, and cultural beliefs and practices
- The rights of differently-able individuals/groups in the workplace
- The effects of discrimination in the workplace (gender, age, education, social status, sexual orientation)
- The advantages and disadvantages of diversity in the workplace

UNIT II: BUILD PROFESSIONAL IMAGE 3 HOURS

Specific Objectives

Upon successful completion of this unit, students are competent when they are able to:

2.1 Justify the need for maintaining a professional image

2.2 Build Professional Competencies

2.3 Build Social Competencies

2.4 Build and Brand Image

Content

To include but not limited to:

- Work place etiquette –(the opening of a door for somebody, waiting for someone to come out of an elevator before going in, social etiquette etc.), managing your emotions
- Professionalism - Tattoos, adornments, inappropriate dressing, grooming, inappropriate conversation, conduct when representing the organization
- Personal Development

UNIT III: USE BUSINESS DOCUMENTS TO COMMUNICATION IN THE WORKPLACE 2 HOURS

Specific Objectives

Upon successful completion of this unit, students are competent when they are able to:

3.1 Produce quality written information

3.2 Complete commonly used business forms

Content

To include but not limited to:

- Reports (accident, technical), letters (request, complaint, apology, job application),
- e-mails
- Forms, notices, schedules, logs used in the related industry

UNIT IV: PREPARE CORRESPONDENCES FOR MEETINGS 6 HOURS

Specific Objectives

Upon successful completion of this unit, students are competent when they are able to:

4.1 Produce documents for business meetings

4.2 Conduct a business meeting

Content

To include but not limited to:

- Memos, Agenda, Minutes
- Action Plans
- Types of reports

UNIT V: PRACTICE ORAL COMMUNICATION 9 HOURS

Specific Objectives

Upon successful completion of this unit, students are competent when they are able to:

5.1 Conduct professional presentation

5.2 Communicate effectively

Content

To include but not limited to:

- Tone, intonation, pitch, rhythm, body language, attire, etc.
- Important elements of public speaking.
- Audience analysis
- Presentation purpose

- Language correctness
  - Stage presence
  - Proper use of stage & props

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ASSESSMENT PROCEDURES

Students will take responsibility for their own academic achievement. They will demonstrate their commitment to attend classes, completing assignments and complying with the institutional/examination policies.

To successfully complete this courses, students must pass ALL of the different components of course.

On-going Assessment Requirements			
No.	**Suggested Unit/Unit Cluster**	**Assessment Strategy**	**Weight**
1	**I, II, III,**	Two in-course tests	20%
2	**IV, V**	Practical Assignments/Projects	20%
3	**VI, VII, VIII**	Field/Laboratory/Practical Activities	40%
4	**IX, X**	Final Assessment	20%
Total			**100%**

FEEDBACK

Students will be given rubrics and grading schemes within the first contact period of the course. Each student will also be given written and oral feedback. Feedback will be immediate and no longer than one week after a task is assessed. Feedback may be documented on assessment evidence.

INSTRUCTIONAL METHODS

This course will be taught using a combination of formal lectures, discussions, role playing, case studies and presentations

RESOURCES

1. Required: Communicating Today: The Essentials Zeuschner, Raymond. (2003).California State University Pearson Education, Inc.

2. Critical Thinking and Everyday Argument, Verlinden, Jay wadsworth, (2005) Cengage learning

FACULTY OF AGRICULTURE	
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO- FOOD PROCESSING
COURSE NAME:	SUPERVISING PRODUCTION PROCESS
COURSE CODE:	AFP PRO105S2
COURSE HOURS:	45 HOURS (45 Hours Theory)
CREDIT VALUE:	3
PREREQUISITES:	APPLYING NUTRITIONAL VALUES
YEAR/SEM.:	YEAR 1, SEMESTER 2
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DESCRIPTION

This course is intended to give students the knowledge, skills and attributes to supervise the production process and the production shop operations. It will expose students to the approaches to start-up, run and shut down the production system.

LEARNING OUTCOMES AND INSTRUCTIONAL OBJECTIVES

Upon completion of this course, students are competent when they are able to:

1. Operate effectively as the process owner of the production system.
2. Supervise the Systems to high levels of productivity.
3. Plan, organize and implement production activities.
4. Lead and work in teams.
5. Execute Quality Control and Quality Assurance Systems.
6. Avoid downtime on product line.
7. Identify bottlenecks, hazards, risks and implement corrective measures.
8. Operate the System to be profitable to the organization
9. Adhere to procedures to start-up, operate and shut down production

10. Organize and implement procedures for cleaning and maintaining equipment, tools and work areas.
11. Minimize waste and institute waste disposal system.
12. Use Stem Principles to operate production process and produce relevant products cost effectively.
13. Comply with regulatory and food safety requirements
14. Produce relevant production documentations and reports.

UNIT I: SUPERVISE PRODUCTION PROCESS OPERATIONS 3 HOURS

Specific Objectives

Upon completion of this Unit, students are competent when they are able to:

1.1 Explain the importance of maintaining the production System in a state of readiness
1.2 Analyze production plans and targets.
1.3 Develop production schedules from plans.
1.4 Review schedules with teams and assign responsibilities
1.5 Plan, organize and implement production activities
1.6 Adhere to procedures to start-up, run/operate quality control production System
1.7 Pre-inspect equipment/tools and adjust as required in operation.
1.8 Apply the requirements of food safety standards and regulation.
1.9 Monitor, sample and test production of process products.
1.10 Follow procedures and shut down production line /System.
1.11 Clean and maintain equipment, production line and other work areas and make ready for next production cycle
1.12 Supervise production and packaging processes.
1.13 Store goods produce according to standards.
1.14 Maintain production records and produce necessary reports.
1.15 Conduct post-production team meetings.

Content

To include but not limited to:

- Production schedules

- Methods for start-up, run and close down operations
- Maintenance and cleaning methods
- Storage procedures
- Regulations and standard operating practices
- Pre-inspection activities
- Post-inspection activities
- Production planning activities

UNIT II: SUPERVISE PRODUCTION ROOM ACTIVITIES 3 HOURS

Specific Objectives

Upon completion of this Unit students are competent when they are able to:

2.1 Assess condition of room prior to start-up operation
2.2 Correct situation likely to affect production
2.3 Sanitize room according to standards
2.4 Effect required personal hygiene and sanitation standards prior to start-up
2.5 Put on protective clothing and gears
2.6 Inspect work areas, production lines and storage
2.7 Check water quality and availability
2.8 Check electrical facilities and supplies
2.9 Check refrigeration and chilly room
2.10 Eliminate potential hazards and risks
2.11 Take corrective action
2.12 Verify the readiness of all processes and sub-processes
2.13 Comply with legal and regulatory requirements
2.14 Organize production room, work stations, equipment and lines
2.15 Set-up, operate quality control production lines
2.16 Shut down facilities according to standards
2.17 Manage waste disposal System
2.18 Clean and maintain facilities to meet next production cycle
2.19 Prepare and submit relevant reports

Content

To include but not limited to:

- Relevant reports and documents:
  - Time sheets
  - Production/log sheets
  - Production reports
  - Administrative reports
  - Sampling and testing records
  - Production batch
  - Non-conforming products
  - Traceability

UNIT III: USE PERFORMANCE PARAMETERS TO DESIGN FOOD PROCESSES 3 HOURS

Specific Objectives

Upon completion students are competent when they are able to:

3.1 Analyze the history of the Food Processing Industry

3.2 Identify the benefits of food processing

3.3 Identify the disadvantages of food processing

3.4 Monitor trends in modern food processing

3.5 Identify production operations in the industry

3.6 De-agglomerate batter mixes

3.7 Use performance parameter to design processes

Content

To include but not limited to:

- Parameters:
  - Hygiene; Minimization of waste; Minimization of clearing stops
  - Energy efficiency; Labor input
  - De-agglomeration process

- History to include :

- Greek - Roman - Pasteurization
- Chaldean - Industrial Revolution - Benefits
- Egyptian - Canning - Disadvantages

- Trends to include:
  - Health
  - Hygiene
  - Efficiency

- Industries to include:
  - Canning - Brewery - Meat Packaging Plant
  - Fish processing - Industrial rendering - Slaughterhouse
  - Food Packaging Plant - Fruits, Nuts, Vegetables - Sugar Industry
  - Bakery - Milk Production

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ASSESSMENT PROCEDURES

Students will take responsibility for their own academic achievement. Students will demonstrate their commitment to their own goal of educational advancement by attending class, completing assigned work, and complying with existing copyright legislations. To successfully complete this course, a student must pass ALL the different components of the course.

On-going Assessment Requirements			
No.	**Suggested Unit/Unit Cluster**	**Assessment Strategy**	**Weight**
1	**I, II, III,**	Two in-course tests	20%
2		Practical Assignments/Projects	20%
3		Field/Laboratory/Practical Activities	40%
4		Final Assessment	20%
Total			**100%**

FEEDBACK

Students will be given rubrics and grading schemes within the first contact period of the course. Each student will also be given written and oral feedback. Feedback will be immediate and no longer than one week after a task is assessed. Feedback may be document on assessment evidence.

INSTRUCTIONAL METHODS

This course will be taught using a combination of formal lectures, discussions, role playing, case studies and presentations.

CAPSTONE EXPERIENCE DESCRIPTION

Students will prepare and host in class post-harvest loss assessment using different crops. Students will be peered to present on the topics that will be given during the course. Each student is expected to present to the audience for 15 minutes. Students will also be taken on field trips of packing house, Min. of Agriculture, Plant Quarantine unit etc. Please refer to the assessment form.

RESOURCES

Recommended Text

1. Davis, C.G. Introduction to Packaging Machinery. Packaging Machinery Manufacturers Institute, Arlington, VA. 1997 (draft).

Recommended Reading

1. Brody, A.L. and Marsh, K.S. 1997. The Wiley Encyclopedia of Packaging Technology, Second Edition. John Wiley & Sons, Inc. New York, NY.
2. Luciano, R. 1995. How to Write Packaging Machinery Specifications. Institute of Packaging Professionals, Herndon, VA.
3. Pyzdek, T. 2001. The Six Sigma handbook. McGraw-Hill, NY.
4. Soroka, W. 1999. Fundamentals of Packaging Technology, Institute of Packaging Professionals, Herndon, VA.
5. Zepf, P.J. 1996. Improving Packaging Line Performance. Institute of Packaging Professionals, Herndon, VA

FACULTY OF AGRICULTURE	
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO-FOOD PROCESSING
COURSE NAME:	OPERATING WAREHOUSE AND DISTRIBUTION SYSTEM
COURSE CODE:	AFP WDS106S2
COURSE HOURS:	45 HOURS (45 Hours Theory)
CREDIT VALUE:	3
PREREQUISITES:	SUPERVISING PRODUCTION
YEAR/SEM.:	YEAR 1, SEMESTER 2
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DESCRIPTION

This course is designed to introduce students to the knowledge, skills and attributes to operate a warehouse and distribution system.

LEARNING OUTCOMES AND INSTRUCTIONAL OBJECTIVES

Upon completion of this course students are competent when they are able to:

1. Explain the function of a warehouse
2. Explain the processes of the distribution system
3. Apply legal and regulatory requirements
4. Identify and use the various types of tools and equipment
5. Maintain the safety and sanitation of the warehouse
6. Manage the warehouse inventories
7. Operate the warehouse
8. Organize the distribution system
9. Prepare required documentation
10. Implement strategies to improve the effectiveness of the system

UNIT 1: OPERATE WAREHOUSE ACTIVITIES 3 HOURS

Specific Objectives

Upon completion of this Unit, students are competent when they are able to:

1.1 Execute the functions of the warehouse in keeping with standard operating procedures

1.2 Adhere to legal and regulatory requirements

1.3 Determine the layout requirements of the warehouse

1.4 Identify types of equipment and tools used

1.5 Classify durable features of warehouse equipment

1.6 Supervise the storage of various types of processed food products.

1.7 Supervise the storage of raw materials

1.8 Adhere to standardized methods of storage

1.9 Monitor warehouse conditions

1.10 Adhere to procedures to avoid contamination, cross-contamination

1.11 Identify signs of contamination and sources of contamination

1.12 Practice personal hygiene at all times

1.13 Monitor temperature conditions and thermometers

Content

To include but not limited to:

- Legal and Regulatory Requirements
- Layout requirements:
  - Internal space and floor area
  - External grounds
  - Exterior of the building
  - Security requirements
- Equipment and Tools:
  - chillers freezer trolleys weighing equipment
  - shelves storage bins gauges for humidity and temperature
  - forklifts pallets
- Features of equipment and tools

- non-toxic
- ease of cleaning and maintenance
- rust resistant
- non-porous
- contaminant free
- odour resistant
- user friendly

- Types of foods stored
  - dry and chilled
  - canned foods
  - chilled
  - dry and frozen foods in cartons
  - frozen, chilled
  - dry and frozen v
  - various types of packaged foods

- Types of raw materials
  - fruits
  - sugar
  - Flour etc.

- Sources Contamination:
  - water
  - contact surfaces
  - rodents
  - animals
  - soil
  - packaging materials
  - insects
  - air
  - raw materials
  - flies

- Personal hygiene:
  - habits and practices
  - cuts
  - personal appearance
  - sores
  - clothing
  - communicable illnesses

- Functions of warehouse
  - reception of goods
  - storage of goods

- raw materials
- distribution of finished goods
- equipment
- issuance of goods for production

- Cleaning and maintenance:
  - fumigation
  - equipment
  - spraying
  - cleaning floors, walls, ceilings, doors,
  - work areas
  - chemical usage

- Temperature conditions:
  - frozen products
  - ambient temperature of warehouse
  - chilled product
  - dry storage
  - thermometers
  - records – temperature logs

- Conditions:
  - temperature
  - airflow pattern
  - humidity
  - lighting
  - ventilation
  - availability of water (hot & cold)

- Contamination agents
  - physical
  - chemical
  - biological and microbiological

- Legal and Regulatory:
  - Food handlers permit
  - Bureau of Standards, Jamaica
  - Food Safety Act
  - Food and Drug Administration (USA)
  - Public Health Act
  - World Health Organization
  - OHS Act
  - Food and Agricultural Organization (FAO)
  - Food Processing Act
  - Good manufacturing practices
  - Factories Act

- Cross Contamination:
  - Hands tools and equipment
  - work area surfaces
  - handles of doors and equipment

- Signs of Contamination:
  - visual
  - colour
  - texture
  - odour

UNIT 2: SUPERVISE DISTRIBUTION SYSTEM ? HOURS

Specific Objectives

Upon completion of this Unit, students are competent when they are able to:

Explain the importance of an effective distribution system to the organization's economic benefits

Identify critical factors in organizing and operating the distribution system

Organize and monitor work processes of the distribution centre

Identify the characteristics of an efficiently operated distribution system

2.1 Comply with regulations and company policies

2.2 Detect and eliminate hazards and risks

2.3 Adhere to procedures to receive, store and distribute finished products

2.4 Introduce quality assurance processes to the distribution System

2.5 Use standards procedures for dispatching products to and from warehouse

2.6 Display accuracy in the documentation of relevant reports and records

Content

To include but not limited to:

- Critical factors
- Economic benefits
- Characteristics of an efficient system

- Regulations
- Risks and hazards
- Receival and disbursement procedures
- Quality Assurance Systems
- Work process of distribution System
- Types of documentation
- Methods of distribution:
- FIFO
- LILO

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ASSESSMENT PROCEDURES

Students will take responsibility for their own academic achievement. Students will demonstrate their commitment to their own goal of educational advancement by attending class, completing assigned work, and complying with existing copyright legislations. To successfully complete this course, a student must pass ALL the different components of the course.

On-going Assessment Requirements			
No.	**Suggested Unit/Unit Cluster**	**Assessment Strategy**	**Weight**
1	**I, II, III,**	Two in-course tests	20%
2		Practical Assignments/Projects	20%
3		Field/Laboratory/Practical Activities	40%
4		Final Assessment	20%
Total			**100%**

FEEDBACK

Students will be given rubrics and grading schemes within the first contact period of the course. Each student will also be given written and oral feedback. Feedback will be immediate and no longer than one week after a task is assessed. Feedback may be document on assessment evidence.

INSTRUCTIONAL METHODS

This course will be taught using a combination of formal lectures, discussions, role playing, case studies and presentations.

CAPSTONE EXPERIENCE DESCRIPTION

Students will prepare and host in class post-harvest loss assessment using different crops. Students will be peered to present on the topics that will be given during the course. Each student is expected to present to the audience for 15 minutes. Students will also be taken on field trips of packing house, Min. of Agriculture, Plant Quarantine unit etc. Please refer to the assessment form.

RESOURCES

Recommended Text

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3. Pyzdek, T. 2001. The Six Sigma handbook. McGraw-Hill, NY.
4. Soroka, W. 1999. Fundamentals of Packaging Technology, Institute of Packaging Professionals, Herndon, VA.
5. Zepf, P.J. 1996. Improving Packaging Line Performance. Institute of Packaging Professionals, Herndon, VA.

	FACULTY OF AGRICULTURE
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO- FOOD PROCESSING
COURSE NAME:	SUPERVISING WORK PRIORITIES AND STAFF DEVELOPMENT
COURSE CODE:	AFP WSD107S2
COURSE HOURS:	60 HOURS (15 Hours Theory and 45 Hours Practical)
CREDIT VALUE:	2
PREREQUISITES:	
YEAR/SEM.:	YEAR 1, SEMESTER 2
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DESCRIPTION

This course is designed to provide students with a basic understanding of effective management and supervisory skills for the Agro processing Sector. Students will be exposed to principles of leadership, management, personnel relationships, industrial relationships, conflict management and team work.

LEARNING OUTCOMES AND INSTRUCTIONAL OBJECTIVES

Upon completion of this course, students will be able to relate to concepts, theories and techniques, which are studied; develop and practice a range of technical competencies, personal competencies and social competencies; identify and develop career paths within their industry. It will also encourage students to develop important employability skills, make contacts with potential employers and construct work experience profiles commensurate with the demands of future employers and explore entrepreneurial opportunities.

Instructional objectives are for students to be able to:

1. Develop interpersonal skills

2. Become effective at influencing others
3. Accomplish goals and outcomes
4. Dealing with staff, peers, management, and other departments
5. Analyses own styles of behaviour
6. Evaluate own leadership styles
7. Develop flexibility to use various leadership styles
8. Explore ways to engage in productive resolution to conflicts debate
9. Lead and manage teams
10. Supervise work programmes of the organizations
11. Supervise staff
12. Create plans for staff development
13. Implement Quality Assurance Systems
14. Provide Quality Customer Services
15. Adhere to legislations, Regulations, Safety and Performance Standards

UNIT I: ORGANIZE, IMPLEMENT AND MONITOR WORK ACTIVITIES 6 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

1. Read and interpret organization's strategic goals, objectives and operational plans for company.
2. Share strategic planning information with staff to engage input and commitment.
3. Develop operational and staff personal work plans and obtain approval.
4. Schedule work plan activities in keeping with staff personal operational plan
5. Establish quality control plans for various components of the bakery department.
6. Delegate areas of responsibility to staff.
7. Establishing reporting periods for staff.
8. Operationalize work processes and activities.
9. Monitor staff activities.
10. Monitor process efficiency level.
11. Identify quality issues, bottlenecks, challenge and implement corrective action.
12. Evaluate work flows and correct problems necessary.

13. Adhere to legislation, OHS and other industry standards.
14. Address staff needs based on merits.
15. Implement maintenance schedule for equipment and tools.
16. Plan, organize and implement cleaning and sanitation programmes.
17. Prepare and maintain relevant documentations using standard English.
18. Provide quality customer service.

Content

To include but not limited:

- Organizations Strategic Plan
- Department Operational Plan
- Work Procedure and processes
- Policy Guideline
- Quality Polices
- Quality Control Procedures
- Types of work place records
- Control Systems
- Guidance Procedures
- Customer Service Polices

UNIT II: SUPERVISE OPERATIONS 10 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

2.1 Develop, implement and monitor plan for operations.

2.2 Identify and select appropriate resources for operations.

2.3 Evaluate the layout of bakery faculties support effects work flow, make adjustments as necessary.

2.4 Deploy staff in keeping with work flow and resource availably.

2.5 Conducts need analyze for operations and recommend strategies for accommodation of resource, or operational charges.

2.6 Monitor production activities of to meet targets.

2.7 Employ Strategies to improve productively level and product quality.

2.8 Apply organization policies and procedures to resolve conflict and dissatisfaction.

2.9 Display professional and ethical behaviour.

2.10 Supervise the inflow of raw materials and commodities.

2.11 Set-up and monitor facilities for finished product inventories.

2.12 Follow regulations, legislations, and OHS in production activities.

2.13 Adhere to procedures to acquire inventories and to manage inventories.

2.14 Handle the orders and control of stocks.

2.15 Coordinate the use of information system and information flow.

2.16 Prepare and present work place documentations.

2.17 Use effective communication styles and techniques.

2.18 Provide effective leadership and quality customer service.

Content

To include but not limited:

- Customer service:
  - Internal staff at all levels
  - Customer of all types
  - Suppliers
  - Distributors
- Information System
  - Communication Modes (email, memos, letter)
  - Internet
  - Telephone
  - Cell phone Usage
- Teamwork and Team Leadership Styles
- Productivity levels
- Efficiency levels
- Organization Policies:
  - Staff relationship
  - Conflict Resolution

- Employment and Employee relations safely
- Production control and Quality Assurance
- Purchasing and inventory

- Needs Analysis
- Layout of faculties
  - Equipment (including oven)
  - Working tables
  - Production flow
- Professional Ethics
- Delegation and Deployment of Staff
- Monitoring Activities:
  - Staff performance
  - Production
  - Equipment and Tool Maintenance
  - Safety and Sanitation

UNIT III: DEVELOP, LEAD AND MANAGE TEAMS 6 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

3.1 Compare Leadership versus Management.

3.2 Employ strategies to develop and makes competent members of work teams.

3.3 Adhere to principles and styles of effective leaders and leadership.

3.4 Use a variety of situational to provide good leadership example.

3.5 Prepare team members to perform leadership roles.

3.6 Develop procedures to foster quality interpersonal relationship.

3.7 Encourage team members to be lifelong learners.

3.8 Use opportunities at work to train staff.

3.9 Encourage team members to transfer learning to each other.

3.10 Use role modelling techniques to motive and encourage team member to high performance.

3.11 Manage team's performance and productivity levels.

3.12 Manage conflict and grievance according to policies.

3.13 Read, interpret and apply labour laws to work activities.

3.14 Use appropriate leadership styles to minimize industrial relationship issues.

3.15 Motive teams to achieve high performance.

3.16 Implement system to record acceptable behaviours and high performance/ high productivity.

Content

To include but not limited:

- Strategies for development
  - Monitoring
  - Coaching
  - Training the job
  - Job notation
  - Delegation
  - Formal training off the job
- Types of Teams
  - Situational Teams
  - Problem Solving Teams
  - Work Teams
  - Team Leader (in training)
- Leadership Style
  - Situational
  - Authoritarian
  - Lassafaire
- Staff Motivation Strategies
- Labour laws/ Industrial Relations
- Role Modelling

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ASSESSMENT PROCEDURES

Students will take responsibility for their own academic achievement. Students will demonstrate their commitment to their own goal of educational advancement by attending class, completing assigned work, and complying with existing copyright legislations. To successfully complete this course, a student must pass ALL the different components of the course.

On-going Assessment Requirements			
No.	**Suggested Unit/Unit Cluster**	**Assessment Strategy**	**Weight**
1	**I, II, III,**	Two in-course tests	20%
2	**IV, V**	Practical Assignments/Projects	20%
3	**VI, VII, VIII**	Field/Laboratory/Practical Activities	40%
4	**IX, X**	Final Assessment	20%
Total			**100%**

FEEDBACK

Students will be given rubrics and grading schemes within the first contact period of the course. Each student will also be given written and oral feedback. Feedback will be immediate and no longer than one week after a task is assessed. Feedback may be document on assessment evidence.

INSTRUCTIONAL METHODS

This course will be taught using a combination of formal lectures, discussions, role playing, case studies and presentations.

CAPSTONE EXPERIENCE DESCRIPTION

Students will prepare and host in class post-harvest loss assessment using different crops. Students will be peered to present on the topics that will be given during the course. Each student is expected to present to the audience for 15 minutes. Students will also be taken on field trips of packing house, Min. of Agriculture, Plant Quarantine unit etc. Please refer to the assessment form.

RESOURCES

COURSE OUTLINES

YEAR 2

SEMESTER 3

FACULTY OF AGRICULTURE	
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO-FOOD PROCESSING
COURSE NAME:	FARM ACCOUNTING AND COST CONTROL
COURSE CODE:	AFP FACC101S3
COURSE HOURS:	45 HOURS (45 Hours Theory)
CREDIT VALUE:	3
PREREQUISITES:	
YEAR/SEM.:	YEAR 2, SEMESTER 3
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DECSRIPTION

This course is intended to expose students to the basic steps in financial accounting for Agricultural enterprises. It introduces the principles, techniques and procedures of financial accounting.

LEARNING OUTCOMES AND INSTRUCTIONAL OBJECTIOVES

Upon completion of this course, students will be able to relate to concepts, theories and techniques, which are studied; develop and practice a range of technical competencies, personal competencies and social competencies; identify and develop career paths within their industry. It will also encourage students to develop important employability skills, make contacts with potential employers and construct work experience profiles commensurate with the demands of future employers and explore entrepreneurial opportunities.

Upon completion of this unit, students are competent when they are able to:

1. Explain how the balance sheet equation is derived
2. Distinguish between assets, liabilities and capital
3. Distinguish between revenue and expenses

4. Explain the use of the ledger
5. Complete double entry recording of transactions in the ledger
6. Calculate and record the closing balance on ledger accounts
7. Extract a trial balance from the ledger balances
8. List errors which would not be evident in trial balances
9. Prepare profit and loss account and balance sheet from the trial balance
10. Distinguish between gross profit and net profit
11. Explain the nature and purpose of accounting conventions
12. Illustrate the uses of the journal
13. Identify the different books of original entry

UNIT I: USE INVENTORY AND DEPRECIATION METHODS 4 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

1.1. Identifies the various kinds of inventory which are found in Agro-food sector
1.2. Compiles and values inventory using methods of inventory valuation.
1.3. Explains the concept and purpose for the depreciation in the accounting system.
1.4. Evaluates the worth of an asset for specified periods using all four methods of depreciation.

Content

To include but not limited to:

- Depreciation methods
- Methods of inventory valuation
- Types of inventory

UNIT II: PREPARE END OF PERIOD ADJUSTMENTS TO ACCOUNTS 9 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

2.1 Explain the importance of making adjustments to accounts

2.2 Carry out adjustments for end of production period.

2.3 Determine accounts to be adjusted

2.4 Apply both the perpetual and the periodic methods of inventory taking

Content

To include but not limited to:

- Types of adjustments.
- Non Cash payment
- Methods

UNIT III: PERFORM PAYROLL ACCOUNTING 6 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

3.1 Calculate gross pay and net pay

3.2 Calculate statutory deductions

3.3 Follow account procedures to handle payroll

3.4 Prepare Cheques

3.5 Prepare the pay slips

3.6 Use accounting software to generate the payroll

Contents

To include but not limited to:

- Gross pay
- Statutory deductions – NIS, NHT, ED. Tax, Income tax, HEART Levy
- Net pay
- Pay slips
- Cheques Processing
- Accounting software

UNIT IV: MANAGE INVENTORY 6 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

4.1 Explain the different kinds of inventory costing and management methods

4.2 Calculate each method of inventory costing system; that is: LIFO, FIFO, and average cost methods

4.3 Use LIFO, FIFO and average cost methods

4.4 Explain the importance of each costing method

4.5 Differentiate between the Perpetual vs. Periodic inventory methods

4.6 Calculate values for the various inventory methods

4.7 Determine inventory carrying costs

4.8 Manage storage, issuance and movement of inventory

4.9 Determine recording points

Contents

To include but not limited to:

- Systems of Management
- Inventory costing systems
- LIFO
- FIFO
- Average Cost Method
- Carrying Costs
- Perpetual versus Periodic inventory

UNIT V: RECONCILE ACCOUNTS OF PARTNERSHIP 8 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

5.1 Apply the accounting principles of reconciliation

Content

To include but not limited to:

- Bank Reconciliation Statement
- Partnership Accounts:

- Trading and Profit and Loss Accounts
- The Appropriation Accounts
- Balance Sheet

UNIT VI: MANAGE LABOUR COSTS 3 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

6.1 Identify the factors that affect labor cost

6.2 Determine labor cost

6.3 Apply steps to control labor costs

6.4 Identify management role in containing labor costs

Content

To include but not limited to:

- Factors
- Method to find labour cost
- Role of management

UNIT VII: MANAGE OTHER RELATED COSTS 2 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

7.1 Calculate overhead costs

7.2 Calculate variable costs

7.3 Calculate fixed costs

7.4 Determine Break-even costs

7.5 Calculate material costs

7.6 Calculate material cost percentages

7.7 Identify factors impacting on material Costs

7.8 Take actions to reduce effects of impacting factors

7.9 Monitor material Costs

Content

- Fixed costs
- Variable costs
- Controllable costs
- Non-controllable costs
- Unit, total, and actual costs
- Prime costs, historical costs, planned cost
- Break-even cost/points
- Cost strategies
- Minimizing Costs
- Monitoring Systems

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ASSESSMENT PROCEDURES

Students will take responsibility for their own academic achievement. Students will demonstrate their commitment to their own goal of educational advancement by attending class, completing assigned work, and complying with institution's policies. To successfully complete this course, a student must pass ALL the different components of the course.

On-going Assessment Requirements			
No.	**Suggested Unit/Unit Cluster**	**Assessment Strategy**	**Weight**
1	**I, II, III,**	Two in-course tests	20%
2	**IV, V**	Practical Assignments/Projects	20%
3		Field/Laboratory/Practical Activities	40%
4		Final Assessment	20%
Total			**100%**

FEEDBACK

Students will be given rubrics and grading schemes within the first contact period of the course. Each student will also be given written and oral feedback. Feedback will be immediate and no longer than one week after a task is assessed. Feedback may be document on assessment evidence.

INSTRUCTIONAL METHODS

This course will be taught using a combination of formal lectures, discussions, practical demonstration, case studies and presentations.

RESOURCES

Required:

1. Hayes, D., K., Miller, A., A &Ninemeier, J., D. (2014). The Professional Restaurant Manager". Prentice Hall:Pearson Education.
2. ISBN-13: 978-0-13-274008-1/ISBN-10: 0-13-274008-7-2

FACULTY OF AGRICULTURE	
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO-FOOD PROCESSING
COURSE NAME:	SUPERVISING PROCESSING SYSTEMS AND OPERATIONS
COURSE CODE:	AFP PSO102S3
COURSE HOURS:	60 HOURS (15 Hours Theory and 45 Hours Practical)
CREDIT VALUE:	2
PREREQUISITES:	NONE
YEAR/SEM.:	YEAR 2, SEMESTER 3
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DESCRIPTION

This course is an introduction to Operations Management with a focus on the public sector. It teaches how managers create public value by delivering services effectively and efficiently. We will examine value considering public welfare and safety, social equity, and resource utilization across a range of services from healthcare to education to transportation. Our examination of effectiveness is based on the 'rights' – right service, right quality, right time and place. Efficiency centers on lowest total cost – direct provider costs, direct recipient costs, indirect societal costs and optimal use of resources. The course begins with a look at value creation in the public sector. Next, quality service delivery will be explored followed by techniques for efficient delivery of services. With this foundation, performance measurement and management will be examined.

LEARNING OUTCOMES AND INSTRUCTIONAL OBJECTIVE

Instructional objectives are for students to be able to:

1. Understand the strategic role of operations management in creating and enhancing a firm's competitive advantages

2. Understand key concepts and issues of OM in both manufacturing and service organizations
3. Understand the interdependence of the operations function with the other key functional areas of a firm
4. Apply analytical skills and problem-solving tools to the analysis of the operations problems

UNIT I: PLAN OPERATIONS OF PLANT 6 HOURS

Specific Objective

Upon completion of this unit, students are competent when they are able to:

1.1 Interpret the Strategic Plans

1.2 Identify Plant Objectives from strategic plan

1.3 Prepare Plant Operational Plans

Content

To include but not limited to:

- Plant Operations
- Operations Strategy
- Strategic Plan

UNIT II: DESIGN AND DEVELOP PRODUCTS 10 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

2.1 Conduct relevant research

2.2 Design product specifications

2.3 Develop product samples

2.4 Conduct relevant and required tests

2.5 Modify specifications based on test findings

2.6 Develop Products

Content

To include but not limited to:

- Product Design
- Service Design
- Form Teams
- Samples of products
- Tests

UNIT III: ANALYZE PRODUCTION PROCESSES 6 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

3.1 Explain the importance of analyzing the production processes

3.2 Identify the processes

3.3 Develop Scope of the Analysis

3.4 Identify possible bottle necks

3.5 Develop analysis tools

3.6 Conduct data collection activities

3.7 Analyze data

3.8 Prepare, document and communicate findings

Content

To include but not limited to:

- Process Analysis
- Manufacturing Process Analysis

UNIT IV: CONDUCT PROCESS RE-ENGINEERING 8 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able:

4.1 Evaluate existing processes

4.2 Determine systemic challenges and problems

4.3 Analyze impact of challenges on production objectives

4.4 Develop corrective actions

4.5 Design and develop re-engineering activities

4.6 Communicate plan to all levels of staff

4.7 Organize required resources

4.8 Implement Re-engineering of processes

4.9 Commission new processes

4.10 Monitor and evaluate new processes

Content

To include but not limited to:

- Job Design and Measurement
- Business Process Reengineering
- Quality Management

UNIT V: CONDUCT PLANNING ACTIVITIES 8 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

5.1. Explain the importance of planning

5.2. Identify factors to be considered for the planning activities

5.3. Organize and collect relevant data to inform the planning

5.4. Organize planning team

5.5. Organize planning meetings

5.6. Develop the necessary plans

5.7. Communicate Plans to all level of staff

5.8. Obtain Approval of plans

5.9. Implement Plans

Content

To include but not limited to:

- Capacity Planning

- Production Plans
- Marketing Plans
- Budgets
- Strategic and Operational Plans
- Aggregate Planning
- Enterprise Resource Planning

UNIT VI: STREAMLINE PRODUCTION ACTIVITIES 2 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

6.1 Identify the benefits of Streaming Operations

6.2 Develop Plans

6.3 Communicate Plan

6.4 Streamline Activities

Content

To include but not limited to

- Attain Lean Production
- Methods of Streamlining
- Communicate Plan

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ASSESSMENT PROCEDURES

Students will take responsibility for their own academic achievement. Students will demonstrate their commitment to their own goal of educational advancement by attending class, completing assigned work, and complying with existing copyright legislations. To successfully complete this course, a student must pass ALL the different components of the course.

On-going Assessment Requirements			
No.	**Suggested Unit/Unit Cluster**	**Assessment Strategy**	**Weight**
1	**I, II, III,**	Two in-course tests	20%

2	**IV, V**	Practical Assignments/Projects	20%
3		Field/Laboratory/Practical Activities	40%
4		Final Assessment	20%
Total			**100%**

FEEDBACK

Students will be given rubrics and grading schemes within the first contact period of the course. Each student will also be given written and oral feedback. Feedback will be immediate and no longer than one week after a task is assessed. Feedback may be document on assessment evidence.

INSTRUCTIONAL METHODS

This course will be taught using a combination of formal lectures, discussions, role playing, case studies and presentations.

CAPSTONE EXPERIENCE DESCRIPTION

Students will prepare and host in class post-harvest loss assessment using different crops. Students will be peered to present on the topics that will be given during the course. Each student is expected to present to the audience for 15 minutes. Students will also be taken on field trips of packing house, Min. of Agriculture, Plant Quarantine unit etc. Please refer to the assessment form.

RESOURCES

Recommended Text

1. Jacobs, Chase, and Aquilano: Operations and Supply Management, 12th ed., ISBN#: 0-07-327873-4 (or other 12th edition)

FACULTY OF AGRICULTURE	
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO-FOOD PROCESSING
COURSE NAME:	APPLY THE PRINIPLES OF FOOD PRESERVATION
COURSE CODE:	AFP PRES103S3
COURSE HOURS:	60 HOURS (15 Hours Theory and 45 Hours Practical)
CREDIT VALUE:	2
PREREQUISITES:	NONE
YEAR/SEM.:	YEAR 2, SEMESTER 3
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DESCRIPTION

This course is designed to give students the knowledge, skills and aptitudes to apply food preservation techniques.

LEARNING OUTCOMES AND INSTRUCTIONAL OBJECTIVES

Upon completion of this course students are competent when they are able to:

1. Apply scientific principles in preserving foods
2. Identify food sources and types
3. Use various methods of food preservation
4. Preserve a range of foods
5. Apply food safety standards
6. Produce quality products

UNIT: APPLY SCIENTIFIC KNOWLEDGE TO PERSEVERATION OF FOOD

6 HOURS

Specific Objectives

Upon successful completion of this unit, students will be able to:

1.1 Express knowledge of the history of food presentation

1.2 Apply knowledge to preserved bacteria, fungi, yeasts other micro-organisms

1.3 Difference between primary- processing food, secondary processing of foods

1.4 Explain the effect of bacteria on food quality

1.5 Use processes/methods to inhibit visual deterioration

1.6 Introduce benign bacteria/fungi food

1.7 Identify sources of food reincarnation

1.8 Use methods to slow the oxidization of fats

1.9 Apply processes to inhibit visual deterioration of food

1.10 Explain concepts, energy input and carbon foot print

1.11 Explain roles of organization, regulation, food safety and process

Content

To include but not limited:

- Types of micro-organisms
- Effects of bacteria
- Effect of benign fungi
- Energy input
- Carbon foot input
- Oxidization
- Primary- processing
- Secondary-processing
- Rancidity
- Visual deterioration
- Recontamination
- WHO
- FOA
- BOJ

UNIT II: APPLY FOOD PRESENTATION TECHNIQUES 10 HOURS

Specific Objectives

Upon successful completion of this unit, students will be able to:

2.1 Explain the economic importance of Food Preservation

2.2 Explain the role of Food preparation in Food security and safety

2.3 Identify the characteristics of traditional techniques

2.4 Identify the characteristics of modern industrial techniques

2.5 Compare and contrast the techniques of traditional versus modern industrial

2.6 Interpret and apply food safety standards.

2.7 Apply parameters food presentation

Content

To include but not limited:

- Types of techniques:
  - Traditional
  - Modern industrial
- Parameters
  - High temperature
  - Low temperature
  - Reduced water acidity
  - Increased acidity
  - Reduced redox potential
  - Bio-preservative
  - Other preservatives
- Application
- Heating
- Freezing
- Drying, Curing, Conserving
- Acid oxidation/ formation
- Removal of oxygen or addition of acerbate
- Competitive flour such as microbial fermentation
- Sorbates, Sulfites, nitrites

UNIT III: APPLY TRADITION TECHNIQUES OF FOOD PRESERVATION 6 HOURS

Specific Objectives

Upon successful completion of this unit, students will be able to:

3.1. Explain the causes of carcinogens effect

3.2. Explain the importance of nutritional value

3.3. Apply method to create, improve and/or maintain nutritional value

3.4. Identify ways in which preservation methods can alter food characteristics

3.5. Identify dissemble characteristics of food preserved.

3.6. Use Traditional techniques of preserving foods

3.7. Employ food safety standards

Content

To include but not limited to:

- Traditional techniques
  - Drying
  - Freezing
  - Sugaring
  - Boiling
  - Cooling
  - Heating
  - Pickling
  - Salting
  - Lye
  - Canning
  - Jellying
  - Curing
  - Fermentation

UNIT IV: APPLYING MODERN TECHNIQUES OF FOOD PRESERVATION 8 HOURS

Specific Objectives

Upon successful completion of this unit, students will be able to:

4.1. Differentiate between the Traditional techniques and modern industrial

4.2. Explain key factors of industrial techniques

4.3. Explain the economic impact of modern industrial

4.4. Use modern industrial methods of food preservation

4.5. Identify the characteristics of each techniques

Content

To include but not limited to:

- Pasteurization
- Vacuum Packing
- Artificial Food Additives
- Irradiation
- Modified atmosphere
- High-pressure food preservation
- Non-thermal plasma
- Bio-preservation
- Hurdle Technology
- Pulsed electric field electro-proration

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ASSESSMENT PROCEDURES

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On-going Assessment Requirements			
No.	**Suggested Unit/Unit Cluster**	**Assessment Strategy**	**Weight**
1	**I, II, III,**	Two in-course tests	20%

2		Practical Assignments/Projects	20%
3		Field/Laboratory/Practical Activities	40%
4		Final Assessment	20%
Total			**100%**

FEEDBACK

Students will be given rubrics and grading schemes within the first contact period of the course. Each student will also be given written and oral feedback. Feedback will be immediate and no longer than one week after a task is assessed. Feedback may be document on assessment evidence.

INSTRUCTIONAL METHODS

This course will be taught using a combination of formal lectures, discussions, role playing, case studies and presentations.

CAPSTONE EXPERIENCE DESCRIPTION

Students will prepare and host in class post-harvest loss assessment using different crops. Students will be peered to present on the topics that will be given during the course. Each student is expected to present to the audience for 15 minutes. Students will also be taken on field trips of packing house, Min. of Agriculture, Plant Quarantine unit etc. Please refer to the assessment form.

RESOURCES

1. Practical Guide (Kindle Ed.) • BRC Standards Issue 6 Quality Manual Packs (Kindle Ed.)
2. ISO 22000 Food Safety Management Quality Manual Pack (Kindle Ed.)

FACULTY OF AGRICULTURE	
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO-FOOD PROCESSING
COURSE NAME:	ESTIMATING AND CALCULATING PROJECT COSTS
COURSE CODE:	AFP CPC104S3
COURSE HOURS:	60 HOURS (15 Hours Theory and 45 Hours Practical)
CREDIT VALUE:	2
PREREQUISITES:	NONE
YEAR/SEM.:	YEAR 2, SEMESTER 3
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DESCRIPTION

This course is designed to give students the knowledge, skills and aptitude to prepare bills of estimates for materials, labours and overheads. The estimates of production time for production runs/cycles and other work relate activities. This course will look at developing production scope, production approval process and monitoring operations.

LEARNING OUTCOMES AND INSTRUCTIONAL OBJECTIVES

Upon completion of this course, students are competent when they are able to:

1. Determine production scope and specification
2. Interpret production specifications
3. Prepare quantities of materials
4. Source resource information or data on materials
5. Use standards operating procedures to determine estimates.
6. Use relevant formulas to determine estimates
7. Obtain buy-in of management and staff

8. Source Costing/Pricing information
9. Identify human resource requirement
10. Develop production schedules
11. Critical path analysis
12. Prepare estimates for production components
13. Set-up production monitory system
14. Produces appropriate documentation
15. Interpret and apply regulations and legislations

UNIT I: ESTIMATE MATERIALS REQUIREMENTS 6 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

1.1 Explain the importance of preparing estimates of materials.
1.2 Provides information for planning and negotiation
1.3 Collect information regarding the production component
1.4 Develop performance objectives or requirements for work activities
1.5 Use accepted rule of thumb to make estimates
1.6 Identify types of materials required and their specification
1.7 Prepare list of materials required
1.8 Select and use tools for estimating materials
1.9 Develop Bills of Quantities for materials
1.10 Estimate materials requirements with accuracy
1.11 Source prices variety of suppliers
1.12 Compare prices and select the best prices for estimations
1.13 Estimates are detailed and accurate
1.14 Prepare documentations, reports and submit
1.15 Create preliminary material budget

Content

To include but not limited to:

- Tools for estimating:

- Paper worksheets
- Electronic Spreadsheets

- Set of guidelines (rules of thumb)
  - Project scope
  - Performance Objectives
  - Sources of Prices
- Interpret:
  - Recipes or Formulae
  - Specifications
  - Instructions given
- Information Collected:
  - Project Location
  - Start-up date
  - Owners
  - Type of project (commercial, industrial, residential)
  - Resource requirements

UNIT II: ESTIMATE CONSULTING TIME REQUIRED 3 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to

2.1 Explain the factors to be considered

2.2 Compare and contrast consulting time versus production time

2.3 Determine production scope from recipes, instructions, specifications given

2.4 Gather and analyze information

2.5 Analyze tasks requirements and complexity levels

2.6 Plan the productions and discuss with production team

2.7 Consult with team members and other professionals

2.8 Quality check plan before presentation to owners and suppliers.

2.9 Submit plan and obtain approval

2.10 Interact with production/work team on work

2.11 Develop production schedules

Content

To include but not limited to:

- Time:
  - Consulting Time
  - Production Time
- Task Activities
- Quality Checks
- Membership of Production Team
- Schedules
- Production Scope

UNIT III: ESTIMATE PRODUCTION TIME 2 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to

3.1 Determine factors to consider in estimation of production time.

3.2 Evaluate requirements of approved plan

3.3 Develop scope of work activities

3.4 Develop prototype or samples as necessary

3.5 Requested evaluation of prototypes by project team

3.6 Estimate production time using rule of thumb or guidelines

3.7 Use appropriate tools for making estimates

3.8 Develop actual and precise work plans with milestones.

3.9 Determine administrative time

3.10 Determine labour time

3.11 Time number of days each activity will take

3.12 Develop production schedule duration

Content

To include but not limited to:

Factors to be considered:

- Scope of activities/tasks for projects
- Guidelines/rule of thumb
- Prototypes
- Tools for Estimating Time Required:
- Worksheet
- Electronic spreadsheets
- Rules of thumb or guidelines
- Work Plans:
- Task activities specified
- Time activities
- Determine overlapping activities
- Determine critical path
- Outline resources requirement
- Time acquisition of resources
- Schedule Duration
- Identify task activity day
- Identify duration of each task
- Specify job activities/assignments

UNIT IV– ESTIMATE LABOUR COSTS 3 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to

4.1. Explain the importance of estimating labour costs
4.2. Determine factors to be considered when setting estimates for labour
4.3. Identify the prerequisites for making estimate of labour cost.
4.4. Identify the types of labour costs
4.5. Source prevailing rates for labour cost relevant to the type of project.
4.6. Analyze rates and select the most appropriate rate for costing labour.
4.7. Calculate direct labour costs with accuracy and according to rate schedule.
4.8. Calculate indirect labour cost.

4.9. Prepare fixed price contract with vendors and/or suppliers.

Content

To include but not limited to:

- Types of Labour Cost:
  - Direct Cost
  - Indirect Cost
- Labour Rates
- Methods of Calculation
- Fixed Price Contract
- Prerequisite for Labour Estimates
- Factors to consider

UNIT V: ESTIMATE OVERHEAD COSTS 2 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

5.1 Explain the importance of overheads

5.2 Identify types and sources of overheads

5.3 Implement ways to minimize overheads

5.4 Identify source of waste and reduce their impact

5.5 Estimate overhead for utility

5.6 Estimate overheads for transportation

5.7 Estimate overhead for inventory carrying costs

5.8 Estimate interest changes

5.9 Estimate costs for statutory deduction

5.10 Estimate for rentals of premises or property

5.11 Estimate rentals for equipment and large tools

5.12 Estimates are prepared according to organizational policies and regulations

5.13 Estimates are prepared with detail and accuracy

5.14 Insurance charges

Content

To include but not limited to:

- Types of overheads:
  - Utilities:
  - Water
  - Light
  - Telephone
  - Internet
- Statutory Deductions:
  - NHT
  - NIS
  - Education Tax
  - PAYE
  - Tax and investment and Interests
- Interest charges:
  - Loans
  - Leases
  - Mortgages
- Types of Insurance Charges:
  - Motor vehicles
  - Property
  - Equipment
  - Utility

UNIT VI: PREPARE BUDGETS 2 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to

6.1 Follow organization's procedure for budget preparations

6.2 Differentiate the types of budgets and their uses

6.3 Use organization format for presentation of budgets

6.4 Prepare budget for materials

6.5 Prepare budget for time

6.6 Prepare budget for labour

6.7 Prepare budget for overhead

6.8 Prepare consolidated budgets

6.9 Prepare budget with details and accuracy

Content

To include but not limited to:

- Budget Format
- Type of Budget
- Consolidated Budget
- Follow regulatory requirements

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ASSESSMENT PROCEDURES

Students will take responsibility for their own academic achievement. Students will demonstrate their commitment to their own goal of educational advancement by attending class, completing assigned work, and complying with existing copyright legislations. To successfully complete this course, a student must pass ALL the different components of the course.

On-going Assessment Requirements			
No.	**Suggested Unit/Unit Cluster**	**Assessment Strategy**	**Weight**
1	**I, II, III,**	Two in-course tests	20%
2		Practical Assignments/Projects	20%
3		Field/Laboratory/Practical Activities	40%
4		Final Assessment	20%
Total			**100%**

FEEDBACK

Students will be given rubrics and grading schemes within the first contact period of the course. Each student will also be given written and oral feedback. Feedback will be immediate and no longer than one week after a task is assessed. Feedback may be document on assessment evidence.

INSTRUCTIONAL METHODS

This course will be taught using a combination of formal lectures, discussions, role playing, case studies and presentations.

CAPSTONE EXPERIENCE DESCRIPTION

Students will interpret given work instructions and other forms of specifications and prepare estimates for materials, labour and time for job completion. They will prepare budget for each element indicated and develop a consolidated budget. Assignments will be assessing according to rubrics given by Lecturer

RESOURCES

Required: Reading

1. COSTING 2nd Edition, T. Lucey, M.Soc.Sc., F.C.M.A., FCCA, J.Dip.M.A
2. Greer, M, Project Management: The Series. Performance and Instructions Journal

Equipment: Computer and Budget Software

Materials: Work Sheets

Human Resources: Lecturer

	FACULTY OF AGRICULTURE
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO-FOOD PROCESSING
COURSE NAME:	PURCHASING, RECEIVING AND STORING MATERIALS AND STOCKS
COURSE CODE:	AFP MAS105S3
COURSE HOURS:	45 HOURS (45 Hours Theory)
CREDIT VALUE:	3
PREREQUISITES:	WAREHOUSING AND DISRTIBUTION
YEAR/SEM.:	YEAR 2, SEMESTER 3
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DESCRIPTION

This course is designed to give students the essentials of the material handling and control process and determine the relationship between the central parts of the process. The course also indicates the objectives, activities and control necessary in purchasing, receiving and storing materials.

LEARNING OUTCOMES AND INSTRUCTIONAL OBJECTIVES

Instructional objectives are for students to be able to:

Upon completion of this course students are competent when they are able to:

1. Take a costing view point to the essentials of material control before actual use in production.
2. Purchase approved material of the of the appropriate quality, specifications and as required
3. Choose suppliers having an appropriate balance between quality, price and delivery
4. Adhere to the procedures to properly receive and inspect materials.
5. Provide proper storage facilities
6. Check stock levels as scheduled

7. Charge to the production account, materials used on an appropriately consistent price
8. Charge indirect materials used in production and non-production activities to the correct cost center including over heads.
9. Documentation, accurately systems and controls at each of the production stages are effective and well designed.
10. Organize and carry out stock taking to ensure that stock/ material quantities on hand are available when required

UNIT I: USE MATERIALS AND STOCKS PURCHASING PRINCIPLES 3 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

1.1 Explain the importance of following the purchasing policies and food safety standard for material purchase.

1.2 Apply pre-purchase specifications to the purchase of materials.

1.3 Identify the features of the raw material conveyance system.

1.4 Explain how the conveyance system relates to the system in food processing flow.

1.5 Explain the elements of the material control process.

1.6 Determine the cost/ economic impact of an efficient purchasing process on the organization.

1.7 Avoid production delay and or interruptions.

1.8 Operate an efficient and effective purchasing process.

1.9 Identify typical sources in the organization for material procedures.

1.10 Prepare purchase requisitions according to standards.

Content

To include but not limited to:

- Principles of purchasing
- Types of Material and Stocks

UNIT II: USE PURCHASING PROCEDURES 10 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

2.1 Explain the stages of purchasing procedures.

2.2 Source suppliers

2.3 Disseminate requests for tender according to policy

2.4 Receipt and vet quotation

2.5 Select suppliers according to specifications

2.6 Prepare and dispatch approved purchase order

2.7 Follow-up with suppliers on orders

2.8 Monitor deliveries

2.9 Carry out cheeks according to standards on recovery materials/ stock

Content

Should include but not limited to:

- Purchasing Procedures

UNIT III: CARRY OUT RECEPTION AND INSPECTION PROCEDURES FOR MATERIALS AND STOCK 3 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

3.1 Explain the importance of the Goods Received Note (GRN) and verification of Suppliers invoices.

3.2 Apply procedures for placing supplier's invoices.

3.3 Adhere to procedures on reception of materials.

3.4 Determine how attributions of raw materials affect pre-processing, processing and end product.

3.5 Determine key factors for inspecting raw materials.

3.6 Classify raw materials according to quality requirements.

3.7 Carry out inspections of raw materials and raised inspection note.

3.8 Identify non-conforming materials.

3.9 Check details of quantities of materials received against purchase order and raise Good Received Note (GRN).

3.10 Copy Good Received Note (GRN) to relevant department.

3.11 Apply criteria for sorting and grading material.

3.12 Weigh, measure and content quantities of materials.

3.13 Adhere to procedures in hardly waste materials.

3.14 Clean materials according to standards.

3.15 Adhere to regulatory requirements.

3.16 Exercise care and accuracy in handling raw materials.

3.17 Prepare reports according to specifications and with accuracy and timelines.

3.18 Dispatch reports to relevant departments.

Content

To include but not limited to:

- Receiving Procedures
- Inspection Procedures
- Documentations
- Types of stocks

UNIT IV: STORE MATERIALS AND STOCK 8 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

4.1 Explain the importance of stock keeping materials to efficient operations.

4.2 Issue required materials and stock with efficiency and speed.

4.3 Receipt materials from internal and external sources.

4.4 Organize storage in logical sequence

4.5 Provide accurate stock figures as required

4.6 Protect stock/material/tools/equipment from damage and deterioration

4.7 Secure the store room from losses.

4.8 Issues materials/stocks from store accurately according to procedures.

4.9 Adhere to produce for the return of materials/stocks.

Content

To include but not limited to:

- Issues and Returns

- Material Requisition Form(issuance)
- Material Return Note Form(returns)

- Sources of receipt (Good's Reception (external items) and Production Reception (internal items)

UNIT V: ORGANIZE STOCKTAKING AND INVENTORY CONTROL 8 HOURS

Specific Objective

Upon completion of this unit, students are competent when they are able to:

5.1. Explain the importance of stocktaking activities
5.2. Contrast and compare the approaches to stocktaking
5.3. Determine and assess factors to considered in taking stock
5.4. Conduct Periodic stocktaking
5.5. Conduct Continuous stocktaking
5.6. Differentiate between centralize versus Decentralize storage
5.7. Undertake stocktaking activities with efficiency and accurately
5.8. Prepare accurate and detached stocktaking records
5.9. Distribute completes and approves records to relevant persons
5.10. Use appropriate methods for pricing and valuation of stock.

Content

To include but not limited to:

- Approaches to stocktaking:
  - Periodic
  - Continuous
- Centralize and Decentralize System:
  - Advantages
  - Disadvantages
  - Comparative Analysis of System
- Features to consider:
  - Availability of staff
  - Location for placing stock

- Valid stock items checked
- Procedure for checking
- Stock Sheets
- Verification check accuracy
- Timing of exercise
- Availability of technical assistance
- Control pricing
- Extension of Stock Sheet

- Pricing and Valuation

UNIT VI: ORGANIZE STOCKTAKING AND INVENTORY CONTROL 3 HOURS

Specific Objective

Upon completion of this unit, students are competent when they are able to:

6.1 Adhere to procedures to record stocks

6.2 Explain the function of perpetual inventory system

6.3 Determine the relationship between the inventory control and the forms investments in

6.4 stock

6.5 Identify the characteristics/features of an inventing system.

6.6 Identify the objectives of inventing control

6.7 Identify the cost types amounted with inventory control

6.8 Determine carrying costs, costs of obtaining stock and transport Cost.

6.9 Use inventing control terminology

6.10 Calculate Control Levels

6.11 Use EOQ formula to calculate Economic Order Quantity

6.12 Price Materials/Stocks

6.13 Explain the objectives in material pricing.

6.14 Identify problems in pricing materials.

6.15 Determine the components of costs allocated with stock

6.16 Determine sources of discrepancies between actual stock and reordered stock

6.17 Conduct Stock Valuation

Content

To include but not limited to:

- Stock Reordering procedures for
  - Features of investing System
  - Recording Stock
  - Monitory Stock levels
  - Forecasting future demands
  - Make reordering decisions
- Inventory Control terminologies
  - Lead/Document time
  - Economic Order Quantities
  - Buffer Stock/Minimum Stock/Safety Stock
  - Maximum Level
  - Reorder Level
  - Reorder Quantity
- Control Level
  - Reorder Level
  - Minimum Level
  - Maximum Level
  - Formula EOQ=
- Costs Allocated with stocks
  - Carrying Costs
  - Cost of obtaining Stock/Ordering Costs
  - Transport Cost
- Stock Valuation methods
- Sources of discrepancies:
  - Incorrect recording
  - Incorrect calculations
  - Incorrect Coding
  - Tender or over issues not noted

- Returns to store not recorder
- Shrinkages, pilferage, evaporation, losses due to breaking bulk
- Loss or non-use of GRNs other appropriate documentations

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ASSESSMENT PROCEDURES

Students will take responsibility for their own academic achievement. Students will demonstrate their commitment to their own goal of educational advancement by attending class, completing assigned work, and complying with existing copyright legislations. To successfully complete this course, a student must pass ALL the different components of the course.

On-going Assessment Requirements			
No.	**Suggested Unit/Unit Cluster**	**Assessment Strategy**	**Weight**
1	**I, II, III,**	Two in-course tests	20%
2		Practical Assignments/Projects	20%
3		Field/Laboratory/Practical Activities	40%
4		Final Assessment	20%
Total			**100%**

FEEDBACK

Students will be given rubrics and grading schemes within the first contact period of the course. Each student will also be given written and oral feedback. Feedback will be immediate and no longer than one week after a task is assessed. Feedback may be document on assessment evidence.

INSTRUCTIONAL METHODS

This course will be taught using a combination of formal lectures, discussions, role playing, case studies and presentations.

CAPSTONE EXPERIENCE DESCRIPTION

Students will prepare and host in class post-harvest loss assessment using different crops. Students will be peered to present on the topics that will be given during the course. Each student is expected to present to the audience for 15 minutes. Students will also be taken on field trips of packing house, Min. of Agriculture, Plant Quarantine unit etc. Please refer to the assessment form.

RESOURCES

COURSE OUTLINES

YEAR 2

SEMESTER 4

FACULTY OF AGRICULTURE	
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO-FOOD PROCESSING
COURSE NAME:	SUPERVISING PERSONNEL
COURSE CODE:	AFP PER101S4
COURSE HOURS:	45 HOURS (45 Hours Theory)
CREDIT VALUE:	3
PREREQUISITES:	NONE
YEAR/SEM.:	YEAR 2, SEMESTER 4
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DESCRIPTION

This course is designed to give students the knowledge, skills and aptitudes in supervision of the personnel resources of the organization. Students will be exposed to the different legislations and regulations related to the subject, personnel development strategies, supervisory strategic and organizational behavior theories.

LEARNING OUTCOMES AND INSTRUCTIONAL OBJECTIVES

1. Upon completion of this course, students are competent when they are able to:
2. Apply relevant Organizational Behaviour Theories to their work
3. Develop the pre-requisite competencies to supervise personnel under leadership
4. Monitor trends in the field of personnel resource management
5. Adhere to legal, regulatory, company policies and regulation in executing their functions
6. Plan, organize and implement strategies for the development of their staff
7. Develop and implement strategic and operational plans for carrying out the various personnel functions and processes
8. Develop and submit for approval relevant budgets
9. Conduct relevant research and surveys on personnel issues

10. Devise and implement strategies to enhance staff motivation, productivity and staff-
11. satisfaction levels
12. Develop and employ appropriate leadership styles to execute own work activities

UNIT I: APPLY ORGANIZATIONAL BEHAVIOUR THEORIES TO WORKPLACE ACTIVITIES 3 HOURS

Specific Objectives

Students are competent when they are able to:

1.1 Explain the importance of Organizational Behaviour Theory to supervision of personnel
1.2 Investigate the effect of organization's culture on employees and their behaviour/
1.3 motivation
1.4 Craft relevant leadership strategies using Organizational Behaviour Theories
1.5 Research Organizational Behaviour Theories relevant to personnel issues
1.6 Employ research finds to solve issues and or supervise personnel
1.7 Use motivational theories to empower staff and improve performance
1.8 Evaluate the impact of group dynamics on the organization
1.9 Use Organizational Behaviour Theories to create positive and productive work
1.10 environment and culture
1.11 Apply knowledge of organizational structure and culture to enhance performance
1.12 Make positive adjustments to organizational change and work-related stresses

Content

To include but not limited to:

- Factors of Motivation
- Early Motivation Theories
  - Hierachy of Needs
  - Theory X and Theory Y
  - Two Factor Theory
  - McLelland's Theory of Needs
  - Herzberg Hygiene Theory

- Contemporary Theories of Motivation
  - Self Determination
  - Goal Setting Theory
  - Self-Efficacy Theory
  - Reinforcement Theory
  - Equity Theory
  - Expectancy Theory
- Job Characteristic Model
- Group Dynamics
- Organizational Culture and Structure

UNIT II: SELECT AND RECRUIT PERSONNEL 3 HOURS

Specific Objectives

Students are competent when they are able to:

2.1. Adhere to company's recruitment policies and procedures
2.2. Conduct Need Analysis for staff recruitment
2.3. Develop criteria for staff recruitment
2.4. Determine criteria for staff selection
2.5. Prepare staff profiles for positions identified to be filled
2.6. Draft for approval advertisements for staff positions
2.7. Process applications received and create short-listings
2.8. Prepare selection criteria
2.9. Organize and guide interview panels
2.10. Adhere to protocols in industry interviews
2.11. Conduct interviews and make recommendations for employment HRD
2.12. Follow-up for employment offer to successful candidates
2.13. Communicate with potential employers organizations employment decisions
2.14. Hold preliminary briefing meeting with successful employee
2.15. Complete relevant documentation

Content

To include but not limited to:

- Needs Analysis process
- Recruitment policies
- Interview approaches for selecting categories of staff
- Appropriate laws and regulations
- Employment Status:
    - permanent
    - temporary (part-time/full-time)
    - contract (short-term/long-term)
- Selection of Interview Panel
- Advertisement policy
- Procedure for making employment offers
- Procedures for communicating decision

UNIT III: CONDUCT STAFF ORIENTATION 3 HOURS

Specific Objectives

Students are competent when they are able to:

3.1 Adhere to company's orientation policy and communication policy

3.2 Plan orientation sessions for staff

3.3 Conduct orientation sessions with staff

3.4 Explain terms and conditions of employment

3.5 Introduce new staff to organization stakeholders

3.6 Prepare and make presentation to stakeholders

Content

To include but not limited to:

- Terms and conditions:
    - Probationary period
    - Employment contract
    - salary and benefits

- Nature and permanency of employment (contract, temporary, part-time, full-time, hourly paid)
- Performance Management programme
- Leave policy
- Staff development policy
- Separation policy
- Job Descriptions
- Retirement policy

- Purpose of Orientation Programme
- Target group for orientation:
  - new staff
  - Existing staff (updates, shifts in policy etc.)
- Introduction to:
  - colleagues
  - work location
  - job function and responsibilities
  - internal departments
  - external stakeholders
- Presentations:
  - Orientation Programme
  - Top Management
  - Staff meetings
  - External stakeholders

UNIT IV: SUPERVISE AND MONITOR PERSONNEL PERFORMANCE 3 HOURS

Specific Objectives

Students are competent when they are able to:

4.1. Comply with company's performance and productivity policies

4.2. Follow the procedures of the performance Systems and procedures

4.3. Initiate steps to improve the Performance Management System

4.4. Guide staff in the use of the Performance Management System

4.5. Interpret Organization Strategic Performance Plan

4.6. Develop Operational Performance plans

4.7. Implement Performance Appraisal Programme

4.8. Supervise and monitor staff and departmental performance

4.9. Evaluate performance as per schedule

4.10. Effect corrective actions to performance issues identified

4.11. Counsel staff having performance issues

4.12. Conduct Performance Appraisal according to company policy

4.13. Adjust performance plans and targets

Content

To include but not limited to:

- Performance Operational Plans
  - department
  - personal
- Corrective Actions:
  - non-performance
  - low performance
  - poor performance
- Performance Appraisal Procedures
- Performance Evaluation schedule:
  - routine
  - periodic
  - annual
- Performance Issues:
  - conflict
  - bottlenecks
  - resource
  - interrelationships
- Performance Appraisal Conduct

UNIT V: PERFORMANCE ADMINISTRATIVE FUNCTIONS 3 HOURS

Specific Objectives

Students are competent when they are able to

5.1. Administer leave entitlement

5.2. Approve leave requests

5.3. Approve over-time work assignment

5.4. Approve time-sheets submitted

5.5. Contribute to the payroll function

5.6. Address staff grievance to resolution

5.7. Contribute to the administration of staff benefits

5.8. Recommend acting appointments of staff

Content

To include but not limited to:

- Leave Entitlement:
  - Vacation
  - Sick
  - Compassionate
  - Study
  - No-pay
- Staff Grievances
  - policy issues
  - work related
  - interpersonal
  - resource
  - work load
  - wage related
  - benefit related
- Acting Appointment
  - vacant position
  - staff on vacation

- new position to be filled

UNIT VI: SUPERVISE STAFF TRAINING AND DEVELOPMENT 3 HOURS

Specific Objectives

Students are competent when they are able to:

5.1 Comply with company training and development policies

5.2 Identify staff training and development needs

5.3 Develop for approval staff training and development plans

5.4 Review and approve personal training and development plan of staff

5.5 Develop for approval budget for staff training and development

5.6 Monitor approved Training and Development Plans and Budgets

5.7 Implement staff training and development activities and monitor as appropriate

5.8 Implement strategies to facilitate development and improvement of staff performance

5.9 Encourage staff to become involved in life-long learning activities

5.10 Implement training intervention strategies

5.11 Explain the importance of training and development productivity and performance improvement tools

5.12 Maintain training and development records

Content

To include but not limited to:

- Implementation:
  - Internal training
  - External training
  - Job rotation
  - Job coaching
  - Acting appointments
- Training and Development Needs Analysis
- Budget Preparation
- Departmental Training and Development Plans
- Development Strategies:

- Coaching
- Mentoring
- Role Modeling
- Job Rotation

- Training Intervention:
  - On the job
  - Institutional
  - Attachment programmes (local, overseas)

UNIT VII: PLAN AND IMPLEMENT STAFF SCHEDULES ? HOURS

Specific Objectives

Students are competent when they are able to:

7.1 Adhere to company's policy on staff scheduling

7.2 Comply with scheduled production activities

7.3 Schedule staff to meet production requirement

7.4 Use schedule to maximize productivity and profitability

7.5 Use Software Applications where available to roster staff

7.6 Develop and communicate approved roster to staff

7.7 Monitor staff schedules and roster

7.8 Adjust personal roster of staff in keeping with particular circumstances

7.9 Delegate tasks and appropriate level of authority in keeping with task assigned

7.10 Prepare reports and maintain records in keeping with policies and procedures

Content

To include but not limited to:

- Production Schedule:
  - Timing
  - Production targets
- Company Policies
- Circumstance:

- leave
- training assignment
- illness
- understaffing

- Software Application

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ASSESSMENT PROCEDURES

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On-going Assessment Requirements			
No.	**Suggested Unit/Unit Cluster**	**Assessment Strategy**	**Weight**
1	**I, II, III,**	Two in-course tests	20%
2		Practical Assignments/Projects	20%
3		Field/Laboratory/Practical Activities	40%
4		Final Assessment	20%
Total			**100%**

FEEDBACK

Students will be given rubrics within the first contact period of the course. Each student will also be given written and oral feedback. Feedback will be immediate and no longer than one week after a task is assessed. Feedback may be document on assessment evidence.

INSTRUCTIONAL METHODS

This course should be taught using a combination of formal lectures, discussions, role play, case studies, demonstration, and group work presentation

CAPSTONE EXPERIENCE DESCRIPTION

Students will prepare and demonstrate through role play an Interview of a person for job position or resolution of grievance issue.

RESOURCES

Required Readings:

1. Evans, Desmond (1990) People, Communication and Organization. Prentice Hall Incorp.
2. Woods, Robert H (2002) Recruitment and Selection 3rd ed. Educational Institute of America

Human Resource:

- Lecturers
- Industry Professionals

FACULTY OF AGRICULTURE	
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO-FOOD PROCESSING
COURSE NAME:	MARKETING PROCESSED FOOD PRODUCTS
COURSE CODE:	AFP MKT102S4
COURSE HOURS:	60 HOURS (15 Hours Theory and 45 Hours Practical)
CREDIT VALUE:	2
PREREQUISITES:	NONE
YEAR/SEM.:	YEAR 2, SEMESTER 4
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DESCRIPTION

This course is designed to exposes the student to the basic principles and practices of marketing. Marketing Strategies will be examined along with marketing concepts and their application to the Agro-Food Processing Sector.

LEARNING OUTCOMES AND INSTRUCTIONAL OBJECTIVES

Upon completion of this course, students will exposed the students to the role of marketing and its core concepts, define the concept of positioning for competitive advantage, illustrate the organizational buying process and outline how companies can be proactive rather than reactive when responding to environmental trends

Upon successful completion of this course, the learner will be competent when they are able to:

1. Explain the importance of marketing's strategic importance and its relevance throughout the restaurant industry
2. Describe the impact of the marketing environment on marketing strategy.
3. Explain the key approaches to understanding customers and their behaviour.
4. Provide alternative approaches to segmenting a market.

5. Describe the key considerations to be taken into account when determining the marketing mix and identify the interrelationship of the different elements.
6. Apply marketing theory to agro-food process markets.

UNIT I: USE MARKETING CONCEPTS 6 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

1.1 Define the terms "marketing", "marketing orientation", "marketing concept" and "market".

1.2 Identify the elements of the marketing mix

1.3 Identify and describe the main factors, which affect marketing decisions.

Content

To include but not limited to:

- Marketing Definitions
- Hospitality Marketing
- Marketing Concepts
- Marketing Orientation
- Demand Management
- Marketing Environments

UNIT II: CONDUCT MARKETING RESEARCH 3 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

2.1. Explain marketing research

2.2. Identify the main factors in Research Procedures

2.3. Distinguish between Primary and Secondary data

2.4. Distinguish between Reactive and Non-Reactive Methods of Data Collection.

2.5. Conduct a Market Needs Analysis for processed food

2.6. Conduct Market Research for processed foods

2.7. Analyze research findings

2.8. Prepare and submit reports

Content

To include but not limited to:

- Market & Marketing Research
- Research motives
- Marketing Research Industry
- Research Procedures
- Analysis of Information Needs
- Funding Information
- Collecting Information

UNIT III: ANALYZE CONSUMER BEHAVIOUR 3 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

3.1 Explain buying behavior of Consumers

3.2 Identify types of consumers and their characteristics

3.3 Explain dissonance and inertia.

3.4 Analyze consumers' behaviour

3.5 Explain the impact of levels of economic activities on consumers' behaviour

3.6 Determine the effects of Culture on consumers" behaviour

Content

Should include but not limited to:

- Structure of Knowledge about Consumer Behaviour
- Key Concepts in Consumer Behaviour
- Personal Characteristics, Social Influence and Culture on Consumer Behaviour
- Models of Consumer Behaviour

UNIT IV: IDENTIFY MARKET SEGMENTS AND SELECT TARGET MARKETS 4 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

4.1 Define market segmentation

4.2 Explain the bases for segmenting consumer markets

4.3 Explain the requirements for effective segmentation

4.4 Determine and select market targets

4.5 Evaluate and select market segments

4.6 Market position the organization

4.7 Explain the steps involved in developing a positioning strategy

Content

To include but not limited to:

- Market segmentation bases:
  - geographic
  - demographic
  - psychographic
  - behavioural
  - requirements for effective segmentation
  - measurable, accessible, substantial, differentiable and actionable market targeting
  - evaluating market segments
  - segment size and growth
  - segment structural attractiveness
  - company objectives and resources
  - selecting target market segments
  - undifferentiated marketing
  - differentiated marketing
  - concentrated marketing
  - micro marketing

- Market positioning:
  - identify possible competitive advantages on which to build a position
  - choosing the right competitive advantages
  - selecting an overall positioning strategy

UNIT V: PLAN MARKETING STRATEGIES 6 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

5.1. Explain the importance of planning market strategies
5.2. Determine Key Factors in planning market strategies
5.3. Collect and Analyze Input Data
5.4. Work with a Planning Team
5.5. Craft marketing strategies
5.6. Infuse new approaches to marketing
5.7. Cost the strategies for implementation
5.8. Implement approved strategies

Content

To include but not limited to:

- Planning and the Objectives
- Forecasting
- Key Factors
- Costing strategies
- Determining Constraints and Profit Gaps
- Strategies, Policies and Plans
- Planning Team
- New Approaches: e-marketing, social media, indirect forms

UNIT V1: DEFINE THE PRODUCTS 3 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

4.1 Define the terminologies

4.2 Identify the major product decisions

4.3 Classify and identify the main Agro - Food products

4.4 Identify products characteristics

4.5 Develop product specifications

4.6 Brand products

Content

To include but not limited to:

- Definitions
- Product Classification
- Terminologies: Product, Mix Product, Product Life Cycle
- Product decisions,

UNIT VII: APPLY PRINCIPLES OF PRICING 3 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

7.1 Distinguish between "price", "worth" and "value"

7.2 Identify the main influences upon the pricing decision

7.3 Explain the importance of cost in pricing.

Content

To include but not limited to:

- Nature of price
- Influences on pricing decision making
- Pricing strategies

UNIT VIII: APPLY PRINCIPLES OF PROMOTION 3 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

8.1 Explain the main function of promotion

8.2 Define the components of the promotion mix

8.3 Identify the factors that influence the size of the promotion budget

Content

To include but not limited to:

- Role and Nature of Promotion
- Promotion Mix
- Communication Problems and Theory
- Budgeting the Promotional activities

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ASSESSMENT PROCEDURES

Students will take responsibility for their own academic achievement. Students will demonstrate their commitment to their own goal of educational advancement by attending class, completing assigned work, and complying with existing copyright legislations. To successfully complete this course, a student must pass ALL the different components of the course.

On-going Assessment Requirements			
No.	**Suggested Unit/Unit Cluster**	**Assessment Strategy**	**Weight**
1	**I, II, III,**	Two in-course tests	20%
2		Practical Assignments/Projects	20%
3		Field/Laboratory/Practical Activities	40%
4		Final Assessment	20%
Total			**100%**

FEEDBACK

Students will be given rubrics and grading schemes within the first contact period of the course. Each student will also be given written and oral feedback. Feedback will be immediate and no longer than one week after a task is assessed. Feedback may be document on assessment evidence.

INSTRUCTIONAL METHODS

This course will be taught using a combination of formal lectures, discussions, role playing, case studies and presentations.

CAPSTONE EXPERIENCE DESCRIPTION

Students will prepare and host in class post-harvest loss assessment using different crops. Students will be peered to present on the topics that will be given during the course. Each student is expected to present to the audience for 15 minutes. Students will also be taken on field trips of packing house, Min. of Agriculture, Plant Quarantine unit etc. Please refer to the assessment form.

RESOURCES

Recommended Texts

FACULTY OF AGRICULTURE	
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO-FOOD PROCESSING
COURSE NAME:	PRODUCING AND PROCESSING MILK AND MILK PRODUCTS
COURSE CODE:	AFP PPM103S4
COURSE HOURS:	60 HOURS (15 Hours Theory and 45 Hours Practical)
CREDIT VALUE:	2
PREREQUISITES:	NONE
YEAR/SEM.:	YEAR 2, SEMESTER 4
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DESCRIPTION

The course is designed to give students the knowledge, skills and aptitudes to understand the composition and properties of milk, the physical and chemical changes occurring in milk, during processing and storage. The course focuses on the biological, chemical, physical, and microbiological aspects of milk, on the technological (processing) aspects of the transformation of milk into its various consumer products; including fluid milk; fermented dairy products; concentrated and dried dairy products; butter; cream and various frozen dairy desserts.

LEARNING OUTCOMES AND INSTRUCTIONAL OBJECTIVES

Upon completion of this course, students are competent when they are able to:

1. Gain an understanding of the compositions and properties of milk.
2. Understand the physical, chemical, the biological changes occurring in milk during processing and storage.
3. Gain an understanding of dairy processing technologies, Unit operations and production of dairy products.

4. Integrate concepts in chemistry, biochemistry, physics, engineering, mathematics with dairy processing operations.
5. Understand their principles in processing of dairy products.
6. Gain the ability to think critically and solve problems and/or issues in dairy science, and technologies that may occur in dairy industries.
7. Gain the ability to think creatively and develop new dairy products suitable and marketable locally, regionally and internationally.

UNIT I: RESEARCH DAIRY SCIENCE AND TECHNOLOGY 6 HOURS

Specific Objectives

Upon successful completion of this unit, students will be able to:

1.1 Conduct research on dairy science and technology
1.2 Explain the importance of dairy milk production to society
1.3 Investigate the markets for and the consumption of milk and dairy products
1.4 Apply basic science in milk chemistry and physical science
1.5 Monitor trends in dairy industry
1.6 Identify the range of products made from milk
1.7 Research and develop new milk based products

Content

To include but not limited to:

- Dairy Science and Technology
- Milk Chemistry
- Characteristics of Milk
- Range of milk based products

UNIT II: CLASSIFY MILK AND DAIRY PRODUCTS 10 HOURS

Specific Objectives

Upon successful completion of this unit, students are competent when they are able to:

2.1. Classify dairy products
2.2. Re view the history milk production in animals

2.3. Explain biology of milk production in animals

2.4. Differentiate Fermented dairy products versus Non-fermented dairy products

2.5. Apply Principles of Milk Science

2.6. Identify milk characteristics ,compositions and properties

2.7. Identify Physical and Chemical properties of milk

Content

To include but not limited to:

- Milk properties- how they can affect the final dairy products
- Colloidal particles of milk
- Fat globules
- Casein
- Chemical and Physical
- History

UNIT III: APPLY PRINCIPLES OF MILK SCIENCE 6 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

3.1 Apply milk microbiology to produce milk and milk base products

3.2 Identify types of microorganisms found in milk

3.3 Factors that affect microbial growth

3.4 Identify undesirable microorganisms in milk

3.5 Identify Spoilage microorganisms

3.6 Identify Pathogenic microorganisms

3.7 Determine Food Safety concerns

3.8 Minimize food borne illness from dairy products

3.9 Identify Desirable microorganisms in milk

Content

To include but not limited to:

- Microbiology of Milk

- Food borne illness
- Types of Microorganisms: Spoilage, Pathogenic
- Factors affecting Microbial growth

UNIT IV: FERMENT DAIRY PRODUCTS 16 HOURS

Specific Objectives

Upon successful completion of this unit, students are competent when they are able to:

4.1 Research the history and types of fermented milks
4.2 Use Principle of Lactic Fermentation
4.3 Identify Lactic acid bacteria and their acid production
4.4 Set-up Starter Cultures
4.5 Research the history of cheese-making
4.6 Apply the Principle of cheese-making
4.7 Identify Essential steps in making cheese
4.8 Identify milk properties and pretreatment
4.9 Make Curd and Whey
4.10 Ripening cheese
4.11 Make a variety of cheese
4.12 Ferment dairy products
4.13 Make Yogurt
4.14 Identify yogurt bacteria
4.15 Identify nutritional properties of yogurt
4.16 Culture Buttermilk
4.17 Make Sour Cream
4.18 Make Acidophilus milk
4.19 Identify the nutritional and therapeutic aspect of fermented dairy products

Content

To include but not limited to:

- Cheese varieties: Cream cheese, Processed Cheese
- Essential Steps

- Properties of Cheese
- Starter Culture
- Principles
- History
- Enzyme-induced clotting
- Probiotics
- Prebiotics

UNIT V: PROCESS MILK USING MILK TECHNOLOGY 8 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

5.1. Comply with procedures for Milk storage and transport
5.2. Quality assure raw milk
5.3. Apply Heat Treatments to milk
5.4. Identify Methods of heating milk
5.5. Explain the effects of heating on milk
5.6. Apply Principles of homogenization of milk
5.7. Use method to concentrate Milk

Content

To include but not limited to:

- Homogenization
- Concentrating milk and their effects
- Evaporation
- Drying
- Spray drying
- Cooling and freezing
- Membrane processes
- Ultra-filtration
- Reverse osmosis

UNIT VI: MAKE DAIRY PRODUCTS 8 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

6.1 Integrate milk processing technologies to make dairy products

6.2 Pasteurize milk

6.3 Sterilized milk

6.4 Reconstituted milk

6.5 Make milk concentrate

Content

To include but not limited to:

- Integration Process
- Homogenize
- Pasteurize
- Concentrate
- Reconstituted

……

ASSESSMENT PROCEDURES

Students will take responsibility for their own academic achievement. Students will demonstrate their commitment to their own goal of educational advancement by attending class, completing assigned work, and complying with existing copyright legislations. To successfully complete this course, a student must pass ALL the different components of the course.

On-going Assessment Requirements			
No.	**Suggested Unit/Unit Cluster**	**Assessment Strategy**	**Weight**
1	**I, II, III,**	Two in-course tests	20%
2	**IV, V**	Practical Assignments/Projects	20%
3		Field/Laboratory/Practical Activities	40%
4		Final Assessment	20%
Total			**100%**

FEEDBACK

Students will be given rubrics and grading schemes within the first contact period of the course. Each student will also be given written and oral feedback. Feedback will be immediate and no longer than one week after a task is assessed. Feedback may be document on assessment evidence

INSTRUCTIONAL METHODS

This course will be taught using a combination of formal lectures, discussions, role playing, case studies and presentations.

CAPSTONE EXPERIENCE DESCRIPTION

Students will conduct a research with a Dairy Processing Plant and collect information on the processing activities. They are to examine the Unit Operations involved, the technologies being used and the range of products that are produced. The students will work in groups. Each group is expected to present to the class for 15 minutes. Students will also be taken on field trips to dairy processing plant

RESOURCES

Recommended Texts

1. Walstra, P., J.T.M. Wouters, and T.J. Geurts, eds. Dairy Science and Technology.
2. 2006, Taylor & Francis Group, LLC: New York.
3. Fox, P.F. and P.L.H. McSweeney, eds. Dairy Chemistry and Biochemistry. 1998,
4. Blackie Academic & Professional: London.
5. Miller, G.D., J.K. Jarvis, and L.D. McBean, eds. Handbook of Dairy Foods and Nutrition.
6. 2000, CRC Press: New York.
7. Cogan, T.M. and J.P. Accolas, eds. Dairy Starter Cultures. 1996, VCH Publishers: NewYork. Potter N.N. and J.H. Hotchkiss. 1995.
8. Food Science. 5th edition. Food Science Texts Series. Aspen Publishers, Inc.

FACULTY OF AGRICULTURE	
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO-FOOD PROCESSING
COURSE NAME:	PROCESSING NUTS CEREALS AND GRAINS
COURSE CODE:	AFP GRN104S4
COURSE HOURS:	60 HOURS (15 Hours Theory and 45 Hours Practical)
CREDIT VALUE:	2
PREREQUISITES:	NONE
YEAR/SEM.:	YEAR 2, SEMESTER 4
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DESCRIPTION

This course is designed to give students the knowledge, skills and aptitudes, to apply processing technology to convert grains, nuts and cereals, into processed protein products. The course will expose the students to all the aspects of Unit Operations, and the methods of preservation and conversion. It will cover the range of products that can be made from cereal, grains and nuts. A major focus will be on wheat in order to be comprehensive in terms of chemistry, functionality and utilization. In that regard, the course covers areas related to the biophysical and biochemical basis for the functionality of intrinsic wheat constituents; including starch; gluten proteins, as well as, extrinsic baking ingredients such as, yeast, chemical leaveners, fats, oxidants, enzymes and other modern improvers.

The course will provide details on the different quality requirements for the various products, the scientific and practical explanations for these differences, and the desired quality characteristics of the finished products.

LEARNING OUTCOMES AND INSTRUCTIONAL OBJECTIVES

Upon completion of this course, students are competent when they are able to:

1. Develop a critical understanding of the uniqueness of wheat as a cereal and grain.
2. Understand the scientific nature of the functionality and inter-relationships of the key constituents in wheat for food utilization.
3. Learn to appreciate the complex nature of flour and the intricacies of modern baking technology.
4. Develop competency to critically evaluate quality of finished baked products.
5. Identify the underlying properties of flour, dough, batter and ingredients functions,
6. Use product formulation, processing and molecular mechanisms.
7. Identify the different cereals, grains and nuts produced and used worldwide.
8. Characterize the chemical composition of edible cereals, grains and nuts.
9. Evaluate nutritional values and functional properties of grains, cereals and nuts.
10. Understand the methods of storage for cereals, grains and nuts.
11. Maintain grains cereals and nuts quality to maximize profits.
12. Understand the processes of dry and wet milling and recognize the end products.
13. Understand the properties and chemical reaction of ingredients used in baking products.
14. Classify the ingredients and processes used for processing cereals, grains and nut based products.

UNIT I: HANDLE RAW MATERIALS (GRAIN, CEREALS AND NUTS) 6 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

1.1 Assess the history of grains, cereals and nuts in diets on human

1.2 Identify the different Products and By-Products made from nuts, cereals and grains

1.3 Determine raw material needs for production

1.4 Determine raw material availability

1.5 Identify material sources

1.6 Adhere to procedures to transport raw materials

1.7 Follow procedures to transfer products from transportation sources

1.8 Maintain quality features of products/raw materials

1.9 Take action to minimize contamination.

1.10 Adhere to storage and issuance procedures

1.11 Practice food safety

Content

- To include but not limited to:
- Product/Raw Material: Fish, Meats, Poultry
- Food Safety Standards
- Contamination
- Type of Storage
- Procedure for Receival and Issuance of Materials
- Refrigeration
- Transportation
- Procedures for transferring products
- Quality, Loss Minimization

UNIT II: CLEAN AND PREPARE MATERIALS (GRAIN, CEREALS, NUTS) 10 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

2.1. Explain factors to be considered in preparing and cleaning materials

2.2. Remove and clean materials of foreign particles

2.3. Remove evidence of contamination

2.4. Remove spoil materials

2.5. Adhere to food safety practices

2.6. Identify features of grains, cereals, nuts

2.7. Maintain nutritional value of materials by adhering to approved standards

2.8. Clean materials following approved practices

2.9. Identify chemical components of the materials

2.10. Maintain milling, enzymes and protein quality

2.11. Prepare cleaned material for appropriate processing technologies

2.12. Adhere to time and cleaning schedules

2.13. Comply with cleaning and maintenance schedule upon completion of activities

2.14. Practice Personal Hygiene

Content

To include but not limited to:

- Foreign Particles: Dirt, discoloration,
- Move Bacteria from meats, poultry, fish
- Cleaning Processes: Water, Microfiltration
- Processing Technologies: Curing, Freezing, Brine, Pickling, Salting, Baking/Roasting
- Cleaning and Maintenance: Walls, Floors, Work Surfaces/Work stations
- Personal Hygiene
- Principal wheat type and end-use quality determining factors:
  - Protein/starch content, grain hardness, dough strength, grain colour (group exercise)
  - milling, enzyme and protein quality.
  - Structure of grains, cereals, nuts and their chemical composition of major component tissues (germ, bran, and endosperm) and their nutritional value

UNIT III: USE DRYING PROCESSES FOR MATERIALS 6 HOURS

Specific Objectives

3.1 Upon completion of this unit, students are competent when they are able to:

3.2 Determine factors to be considered before drying grains, cereals and nuts products.

3.3 Determine factors to be considered after drying grains, cereals and nuts products

3.4 Determine appropriate methods for drying different types of grains, cereals and nuts

3.5 Use appropriate method to dry types of protein

3.6 Identify different types of milling processes

Content

To include but not limited to:

- Methods:
  - Sun Drying

- Spray Drying
- Freeze Drying

- Features:
- Sun Drying
- Freeze Drying
- Spray Drying

- Wheat dry milling
  - process and equipment: tempering, break and reduction, purifiers and sifters, flour
  - blending
  - comparison of milling of hard common wheat, soft wheat and durum wheat
  - flour classification and grading
  - nutritional consequences of flour milling and flour enrichment
- Gluten wet milling and functionality for food and industrial use
  - properties and baking and industrial uses of gluten
  - laboratory and industrial methods of gluten extraction flour

UNIT IV: ANALYZE CHEMISTRY OF GRAIN, CEREALS AND NUTS CONSTITUENTS 8 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

4.1 Analyze the chemical compositions of grains, cereals and nuts

4.2 Asses the functionality of grains, cereals and nuts

4.3 Analyze the structure and molecular properties of grain, cereals and nuts

4.4 Analyze compositions of starch

4.5 Analyze compositions of proteins

Content

To include but not limited to:

- Starch:
  - starch granule morphology (comparison of wheat, barley, oats and rice)
  - chemical composition; amylase and amyl pectin

- functionality: hydration, gelatinization, retro-gradation and staling
- resistant starch as dietary fibre

- Proteins:
- classification: albumins, globulins, gliadins, glutenins
- structure and molecular properties: amino acid compositions, monomers and
- polymers, glutenin subunits, molecular size distribution
- molecular models of dough
- chemistry and functionality: solubility, viscosity, elasticity, gas retention
- health issues: gluten protein intolerance and celiac disease

UNIT V: ANALYZE THE CHEMISTRY OF FUNCTIONALITY OF BAKING INGREDIENTS 8 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

5.1 Analyze the chemical compositions of baking ingredients

5.2 Asses the functionality of grains, cereals and nuts

5.3 Analyze the structure and molecular properties of grain, cereals and nuts

5.4 Identify diverse utilization of wheat

Content

To include but not limited to:

- Water
- Salt
- Sugars and sweeteners
- Fats and oils
- Dough strengtheners, crumb softeners and emulsifiers
- Enzymes
- Eggs and egg products
- Milk and milk products
- Starches and gums
- yeast foods

- oxidants and reductants
- miscellaneous ingredients (malt products, soy and potato flour, vital wheat gluten, fibre)
- diverse utilization: flat and steamed breads

UNIT VI: USE FORMING PROCESS 2 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

6.1 Explain the functions of the Forming Processing

6.2 Identify components of the Forming Process

6.3 Determine factors to be considered for pre-forming process

6.4 Determine factors to be considered for post-forming process

6.5 Determine products to be formed

6.6 Form products to specifications

6.7 Follow food safety requirements

Content

To include but not limited to:

- Forming Components: Compacting, Pressure, Mold , Extrusion Cooking
- Heat and Pressure
- Products Formed: Flour, Breads, Cornflakes, Roasted Nuts, Condiments
- Flour requirements and quality considerations
- Ingredients and formulations
- Processing Methods

UNIT VII: PACKAGE AND LABEL PROTEIN PRODUCTS 2 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

7.1 Explain the importance of Packaging and Labeling

7.2 Identify the type of packaging and labeling

7.3 Adhere to legal requirements for packaging and labeling

7.4 Use a variety of packaging materials

7.5 Test process products before packaging

7.6 Use packaging and labeling equipment

7.7 Package and Label processed grains, cereals and nuts products

7.8 Store package processed products

Content

To include but not limited to:

- Equipment and Tools:
  - Vacuum Pack Machine
  - Retort
  - Sealing/Heat Gun
  - Form, Fill, Seal Machine
  - Weighing Tools
  - Refractor Meter
  - Exhaust Box Can Sealer

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ASSESSMENT PROCEDURES

Students will take responsibility for their own academic achievement. Students will demonstrate their commitment to their own goal of educational advancement by attending class, completing assigned work, and complying with existing copyright legislations. To successfully complete this course, a student must pass ALL the different components of the course.

On-going Assessment Requirements			
No.	**Suggested Unit/Unit Cluster**	**Assessment Strategy**	**Weight**
1	**I, II, III,**	Two in-course tests	20%
2		Practical Assignments/Projects	20%
3		Field/Laboratory/Practical Activities	40%
4		Final Assessment	20%
Total			**100%**

FEEDBACK

Students will be given rubrics and grading schemes within the first contact period of the course. Each student will also be given written and oral feedback. Feedback will be immediate and no longer than one week after a task is assessed. Feedback may be document on assessment evidence.

INSTRUCTIONAL METHODS

This course will be taught using a combination of formal lectures, discussions, role playing, case studies and presentations. Students will also be taken on field trips to gain relevant experience

CAPSTONE EXPERIENCE DESCRIPTION

Students conduct a research on a Food Processing Company that process one of the following:

1. Wheat into flour and or flour based products
2. Produces cereal from grains. E.G Cornflakes.
3. Process Nuts. E.G Peanuts, Cashew, Almond , Peanut Butter

Students will be grouped to do the research. Each group is expected to present to the class for 15 minutes, their research findings.

RESOURCES

FACULTY OF AGRICULTURE	
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO-FOOD PROCESSING
COURSE NAME:	PROCESSING PROTEIN PRODUCTS
COURSE CODE:	AFP PTN105S4
COURSE HOURS:	60 HOURS (15 Hours Theory and 45 Hours Practical)
CREDIT VALUE:	2
PREREQUISITES:	NONE
YEAR/SEM.:	YEAR 2, SEMESTER 4
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DESCRIPTION

This course is designed to give students the knowledge, skills and aptitude to apply processing technology to convert raw meats, fish and poultry into processed protein products. The course will expose the students to all the aspects of Unit Operations, and the methods of preservation.

LEARNING OUTCOMES AND INSTRUCTIONAL OBJECTIVES

Upon completion of this course, students are competent when they are able to:

1. Apply the technologies used to process meats, fish and poultry
2. Adhere to food safety requirements for processing meats, fish and poultry
3. Adhere to procedures to transport unprocessed and processed products
4. Store unprocessed and processed products according to standards
5. Apply procedures for packaging and labeling processed products
6. Comply with the requirements of Unit Operations
7. Follow procedures to minimize losses
8. Detect risks and hazards likely to contaminate unprocessed and processed products
9. Apply cost effective strategies an enable profitability and sustainability

UNIT I: HANDLE PROTEIN MATERIALS (FISH, MEAT AND POULTRY 6 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

1.1 Determine raw material needs for production

1.2 Determine raw material availability

1.3 Identify material sources

1.4 Adhere to procedures to transport live animals

1.5 Follow procedures to transfer products from transportation sources

1.6 Maintain quality features of products/raw materials

1.7 Take action to minimize contamination

1.8 Adhere to storage and issuance procedures

1.9 Practice food safety procedures

Content

To include but not limited to:

- Product/Raw Material: Fish, Meats, Poultry
- Food Safety Standards
- Contamination
- Type of Storage
- Procedure for Receival and Issuance of Materials
- Refrigeration
- Transportation
- Procedures for Transferring products
- Quality, Loss Minimization

UNIT II: PREPARE AND CLEAN MATERIALS 10 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

2.1 Explain factors to be considered in preparing and cleaning materials

2.2 Remove and clean materials of foreign particles

2.3 Remove evidence of contamination

2.4 Remove spoil materials

2.5 Adhere to food safety practices

2.6 Clean materials following approved practices

2.7 Prepare cleaned material for appropriate processing technologies

2.8 Adhere to time and cleaning schedules

2.9 Comply with cleaning and maintenance schedule upon completion of activities

2.10 Practice Personal Hygiene

Content

To include but not limited to:

- Foreign Particles: Dirt, discoloration,
- Move Bacteria from meats, poultry, fish
- Cleaning Processes: Water, Microfiltration
- Processing Technologies: Curing, Freezing, Brine, Pickling, Salting, Baking/Roasting
- Cleaning and Maintenance: Walls, Floors, Work Surfaces/Work stations
- Personal Hygiene

UNIT III: SEPARATE MATERIALS 6 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

3.1 Identify factors to be considered in separating materials

3.2 Comply with food safety practices

3.3 Follow procedures to separate products

3.4 Separate materials based on separation specifications

3.5 Use density based separation

3.6 Remove sediments and microorganisms

Content

To include but not limited to:

- Separation Specifications: (Density, Shape, Size
- Density Based
- Factors to Be Considered
- Food Safety

UNIT IV: PERFORM SIZE REDUCTION 8 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

4.1 Explain the purposes of reducing materials

4.2 Use size reducing tools and equipment

4.3 Use size reducers for protein materials

4.4 Follow safety procedures

4.5 Apply personal hygiene

4.6 Reduce protein material to size specifications

Content

To include but not limited to:

- Size Reducers for Protein Products(Beef, Pork, Fish Poultry): Grinders, Slicers, Sausage Stuffers
- Adjustment To Sizes : Reduction of Sizes, Increase in Sizes
- Method of Adjustments: Aggregation, Agglomeration
- Gelation

UNIT V: DRY PROTEIN MATERIALS 8 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

5.1 Determine factors to be considered before drying protein products.

5.2 Determine factors to be considered after drying protein products

5.3 Determine appropriate methods for drying different types of protein

5.4 Use appropriate method to dry types of protein

Content

To include but not limited to:

- Methods:
- Sun Drying
- Spray Drying
- Freeze Drying
- Features:
- Sun Drying
- Freeze Drying
- Spray Drying

UNIT VI: FORM PROTEIN PRODUCTS 2 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

6.8 Explain the functions of the Forming Processing

6.9 Identify components of the Forming Process

6.10 Determine factors to be considered for pre-forming process

6.11 Determine factors to be considered for post-forming process

6.12 Determine products to be formed

6.13 Form products to specifications

6.14 Follow food safety requirements

Content

To include but not limited to:

- Forming Components: Compacting, Pressure, Mold , Extrusion Cooking
- Heat and Pressure

- Products Formed: Hamburgers, Sausages Beef Patties, Chicken Nuggets

UNIT VII: PACKAGE AND LABEL PROTEIN PRODUCTS 2 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

7.1 Explain the importance of Packaging and Labeling

7.2 Identify the type of packaging and labeling

7.3 Adhere to legal requirements for packaging and labeling

7.4 Use a variety of packaging materials

7.5 Test process products before packaging

7.6 Use packaging and labeling equipment

7.7 Package and Label processed protein products

7.8 Store package protein products

Content

To include but not limited to:

- Equipment and Tools:
- Vacuum Pack Machine
- Retort
- Sealing/Heat Gun
- Form, Fill, Seal Machine
- Weighing Tools
- Refractor Meter
- Exhaust Box Can Sealer

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ASSESSMENT PROCEDURES

Students will take responsibility for their own academic achievement. Students will demonstrate their commitment to their own goal of educational advancement by attending class, completing assigned work, and complying with existing copyright legislations. To successfully complete this course, a student must pass ALL the different components of the course.

On-going Assessment Requirements

No.	Suggested Unit/Unit Cluster	Assessment Strategy	Weight
1	**I, II, III,**	Two in-course tests	20%
2		Practical Assignments/Projects	20%
3		Field/Laboratory/Practical Activities	40%
4		Final Assessment	20%
Total			**100%**

FEEDBACK

Students will be given rubrics and grading schemes within the first contact period of the course. Each student will also be given written and oral feedback. Feedback will be immediate and no longer than one week after a task is assessed. Feedback may be documented on assessment evidence.

INSTRUCTIONAL METHODS

This course will be taught using a combination of formal lectures, discussions, role playing, case studies and presentations.

CAPSTONE EXPERIENCE DESCRIPTION

Students will be require to do a study tour of a Protein Processing Plant to investigate tits processing functions and the product lines Students will be placed in groups for this assignment and present their findings to the class. Each group is expected to present to the audience for 15 minutes. Students will also be taken on field trips to Slaughter Houses, Poultry Processing Plant and Packaging House, Meat Processing

RESOURCES

Recommended Texts

FACULTY OF AGRICULTURE	
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO-FOOD PROCESSING
COURSE NAME:	MANAGING UTILITIES AND WATER TREATMENT
COURSE CODE:	AFP UWT106S4
COURSE HOURS:	45 HOURS (45 Hours Practical)
CREDIT VALUE:	1
PREREQUISITES:	NONE
YEAR/SEM.:	YEAR 2, SEMESTER 4
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DESCRIPTION

This course is designed to give students the knowledge, skills and aptitudes and management strategies used to maximize the performance of utilities which, in turn, provides benefits; enhanced productivity, financial stability and the overall sustainability of the utility.

This course offers students the opportunities to devise strategies to manage potable and waste water treatments

LEARNING OUTCOMES AND INSTRUCTIONAL OBJECTIVES

Upon completion of this course students are competent when they are able to:

1. Manage the utilities' needs of the organization's operations
2. Forecast utilities' demand levels
3. Develop and implement utilities conservation programmes
4. Develop and implement renewable energy programme
5. Manage the cost of utilities
6. Apply fundamentals Water Chemistry;

7. Evaluate the parameters that characterize the constituents of potable water and
8. Wastewater
9. Assess the physical, chemical and biological units encountered in water treatment processes;
10. Explain the fundamentals of water and wastewater treatment;
11. Analyze water quality data
12. Identify the characteristics of potable water and wastewater
13. Develop a preliminary design of a water and/or wastewater treatment plant

UNIT I: ANALYZE WATER CONDITIONS 6 HOURS

Specific Objectives

Upon completion of this unit, student are competent when they are able to:

1.1 Explain the Hydrological Cycle
1.2 Analyze the quality of potable water
1.3 Analyze the condition of waste water
1.4 Use analyzed data to develop plan of action
1.5 Identify resources to effect plan of action
1.6 Cost resource requirements
1.7 Prepare purchasing documents for resource acquisition
1.8 Submit purchasing documentation for approval
1.9 Follow up on purchasing
1.10 Analyze water quality data

Content

To include but not limited to:

- Hydrologic Cycle
- Quality and Conditions
- Process of analysis
- Resources: cost, manpower, tools/equipment
- Purchasing documents
- Water: waste water and potable water

UNIT II: APPLY FUNDAMENTALS OF WATER CHEMISTRY 10 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

2.1 Explain the importance of Water Chemistry

2.2 Evaluate the characteristics of water types

2.3 Analyze the chemical composition of water

2.4 Determine the chemical impact of water on food processing activities

Content

To include but not limited to:

- Water Chemistry
- Water types (Potable and waste)
- Chemical Composition (Potable and Waste)
- Impacts of water (Biological and Chemical)

UNIT III: APPLY TREATMENT TO POTABLE WATER 6 HOURS

Specific Objectives

Upon completion of this unit students are competent when they are able to:

3.1 Identify the characteristics of Potable Water

3.2 Explain the term potable water

3.3 Explain the process of obtaining potable water

3.4 Identify the conditions impacting potable water

3.5 Identify the process of water treatment

3.6 Determine factors to be considered in water treatment process

Content

To include but not limited to:

- Characteristics of potable water
- Factors (Chemical, physical, biological)
- Process for potable water
- Definition of terms

UNIT IV: APPLY TREATMENT TO WASTE WATER 8 HOURS

Specific Objectives

Upon completion of this unit students are competent when they are able to:

4.1 Identify the characteristics of wastewater

4.2 Explain the impact of sludge on water

4.3 Identify levels of water treatments processes

4.4 Explain the term wastewater

4.5 Identify the possible components of wastewater

4.6 Determine environmental impacts of wastewater

4.7 Adhere to legislation and regulations regarding wastewater management

4.8 Identify the roles of agencies involved in waste management.

4.9 Explain the importance of recycling wastewater

4.10 Employ strategies to minimize contamination of recycled water on food processing

Content

To include but not limited to:

- Characteristics of wastewater
  - Primary, Secondary and Tertiary Treatment Processes
  - Sludge disposal
- Definition of terms
- Components of wastewater
- Environmental impacts of waste water
- Legislations and regulations regarding wastewater
- Agencies involved in wastewater management
- Process of recycling wastewater
- Contamination reduction strategies

UNIT V: DESIGN SIMPLE WATER TREATMENT PLANT 6 HOURS

Specific Objectives

Upon completion of this unit students are competent when they are able to:

5.2 Identify the levels of water treatment processes

5.3 Conduct research on design requirements

5.4 Analyze research data

5.5 Collate and review research data

5.6 Develop design specifications

5.7 Test design specifications and modify according to feedback

5.8 Develop simple design

5.9 Prepare costing for design

5.10 Submit for approval

Content

To include but not limited to:

- Levels of water treatment processes
- Design of treatment plants
- Research sources (internet, library, resource personnel, NWC, NIC)
- Design specifications (prototypes)
- Costing of Design
- Testing/ Validation sources

UNIT VI: DEVELOP AND IMPLEMENT UTILITIES CONSERVATION PROGRAMME 6 HOURS

Specific Objectives

Upon completion of this unit students are competent when they are able to :

6.1 Identify the levels of water treatment processes

Content

To include but not limited to:

- Levels of water treatment processes
- Design of treatment plants

UNIT VII: MANAGE ORGANIZATION'S UTILITIES NEEDS 6 HOURS

Specific Objectives

Upon completion of this unit students are competent when they are able to:

7.11 Forecast Organization' Utilities Needs

7.12 Conduct Needs Analysis

7.13 Determine Utilities' Demands Schedules

Content

To include but not limited to:

- Methods of Forecast
- Needs Analysis
- Schedules: monthly quarterly, yearly

UNIT VIII: CONDUCT COMMERCIAL ENERGY AUDITS 8 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

1.1 Develop audit plan and scope

1.2 Prepare audit Team

1.3 Explain energy auditing and practice for commercial building

1.4 Apply the Lighting Services Theory and efficient design

1.5 Identify factors that impact on refrigerator energy usage

1.6 Evaluate the food storage services and efficient design

1.7 Evaluate the water heating services and efficient design

Content

To include but not limited to:

- Commercial Energy Audits
- Water supply and use encompassing:
  - Collecting and analysis of information for commercial facilities water use and methods to improve water efficiency in the home
  - Ability to analyze the water consumption index for different commercial sectors
  - Ability to analyze commercial facilities water use and ways to minimize the use of water

- Understanding on the methodology applied to water savings
- Calculating water star rating

- Energy auditing and practice encompassing:
  - Scope of Jamaican Standards for energy auditing
  - Energy audit process in relationship to data collection, analysis and the communication of results
  - Accounts, bills and data, tariff structures and the identification of commercial tariff types
  - Calculating energy and energy balance including power calculations, usage time calculations, power factor calculations and energy conversions from kwh to MJ
  - Process involved in onsite assessment in a commercial facilities energy audit
  - Gathering information on commercial facilities energy use and costs
  - Risks and hazards associated in a commercial facilities energy audit
  - Calculate energy and power
  - Power rating of equipment and metering and measurement in a commercial facilities energy audit
  - Calculating energy balance for commercial facilities
  - Advice on ways to improve energy efficiency
  - Calculating greenhouse emission, emissions factors, carbon intensity of electricity vs. natural gas and LPG and global warming potential and CO2 equivalents
  - Financial analysis in terms of simple payback and simple payback period and return on investment or rate of return
  - Reporting and communication of energy audit results
  - Understanding and explaining the operation of the seven different power and energy monitoring equipment available
  - Understanding the implications of data recording intervals for monitoring equipment
  - Developing a power and energy monitoring strategy for a commercial facility
  - Deploying commercial facility power and energy monitoring strategy
  - Drawing conclusions and report on power and energy data collection in a commercial facility

- Lighting services and efficient design encompassing:
  - Fundamental illumination design for commercial facilities
  - Illumination terms: light output, light level and brightness
  - Determining target light levels for differing tasks
  - Characteristics of light sources including efficacy, colour temperature and colour rendering index
  - Ballast types, their efficiency and benefits
  - Incandescent lamps, LED, Induction Lamps, halogen lighting, commercial fluorescent lighting, metal halide, mercury vapour and comparisons between these and applications for the commercial facilities
  - Application of lighting methodology for best practice energy efficiency design
  - Energy saving lighting opportunities in the commercial facilities

- Food storage services and efficient design encompassing:
  - Refrigeration system basics operation
  - Different refrigeration models
  - Refrigeration characteristics including operation, automatic defrost, cooling temperature control, ice maker, ice and water dispenser, door seals and hinges
  - Factors that impact on refrigerator energy use including size, configuration temperature setting, clearance around cabinet and ambient conditions, making ice, ice and water and sweat heaters, seals, insulation, compressor efficiency and age
  - Refrigerator and freezer star ratings
  - Cold room and freezer room energy saving opportunities
  - Food storage saving opportunities
  - Food preparation services and efficient design encompassing:
  - Different food preparation appliances
  - Different operation of gas and electric hot plates and ovens and the advantages and disadvantages of each
  - EMI food preparation methodology
  - Food preparation saving opportunities
  - Food preparation services and efficient design

- Water heating services and efficient design encompassing:
  - Different water heaters including electric and gas storage, gas instantaneous (continuous flow), electric heat pump and solar hot water heaters
  - Solar water heater configurations and characteristics including passive (or thermo siphon) systems and active (or pumped) systems solar collector types, one shot booster
  - RECs and STCs and how these relate to solar water heater STCs
  - Factors that influence water heater energy use including pipe work and fitting insulation, atmospheric conditions, water efficiency

- Temperature setting and maintenance & operation:
  - Water heating / cooling calculations
  - EMI water heating methodology
  - Commercial water heating saving opportunities
  - Types of entertainment and administration appliances found in commercial residences

UNIT IX: MANAGE ORGANIZATION'S UTILITIES' COSTS 3 HOURS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

1.1 Develop audit plan and scope

1.2 Prepare audit Team

1.3 Identify energy management legislations and regulations

1.4 Explain Water supply and use for industrial properties and enterprises

1.5 Evaluate the food storage services and efficient design

1.6 Evaluate the water heating services and efficient design

1.7 Explain Smart Metering Solutions used in industrial properties and enterprises

1.8 Conduct Industrials Energy Audits

1.9 Analyze findings, determine correct actions, prepare and present reports

Content

To include but not limited to:

- Industrial energy audits
- Energy Management Legislation and Regulation
  - National Building Code
  - Standards for Energy Auditing
  - National based legislation for energy management in business
  - Energy Efficiency Opportunities Act
  - National energy reporting schemes
  - Minimum Renewable Energy
  - Renewable Energy Credits
  - Small Technology Credits

- Water supply and use encompassing:
  - Collecting and analysis of information for industrial facilities water use and methods to improve water efficiency in the industrial facilities
  - Ability to analyze the water consumption index for different industrial sectors
  - Ability to analyze industrial facilities water use and ways to minimize the use of water
  - Understanding on the methodology applied to water savings
  - Calculating of water star rating

- Energy management encompassing:
  - Energy management strategies
  - Practice based energy management
  - Technology based energy management
  - Interaction between human resources and practice based control
  - Application of technology based energy management
  - Identify potential energy savings from application of energy management
- Power and energy data recording encompassing:
  - Identifying the structure and purpose of power and energy data recording for whole systems and equipment
  - Reviewing or develop single line schematic of electrical system of an industrial facility

- Establishing the power and energy data gap from the energy audit to achieve standard compliant energy audits
- Identifying electrical loads that need to contribute more than 5% of energy use
- Understanding and explaining the operation of the seven different power and energy monitoring equipment available
- Understanding the implications of data recording intervals for monitoring equipment
- Developing a power and energy monitoring strategy for an industrial facility
- Deploying industrial facility power and energy monitoring strategy
- Drawing conclusions and report on power and energy data collection in an industrial facility

- Water auditing services and design encompassing:
  - Water flow rates of taps, showers and irrigation, toilets, washing machines, dishwashers, filtration and top up water use for cooling towers and pool systems
  - Industrial facility water meter reading
  - Trends of water use and charges for industrial facilities
  - Water Efficiency Labeling (WELS) Scheme relating to water auditing
  - Identification of water efficiency
  - Opportunities in industrial facility
  - Assessments
  - Operation of a rain water and grey water systems
  - Factors that impact on landscape water demand
  - Thermal performance and climate control encompassing:

- Thermal performance of a building impacts on heating, ventilation and air conditioning energy use including:

  - Orientation, thermal mass, insulation, glazing, shading and ventilation
  - Air conditioning designs including central, ducted systems, split-system air conditioners, multi-headed split systems, individual room air conditioners (rac), through wall / window and portable units

- Improvement to air movement systems in industrial facilities including diffusers
- Improvement to ventilation systems in industrial facilities
- Improvement of thermal performance of an industrial building envelop elements
- Application of climate zones
- Air conditioning technologies including refrigerated type air conditioning, inverter type air conditioning, reverse cycle air conditioning, evaporative air conditioners, breeze
- power systems and digital scroll compressors
- Application of Energy Efficiency Ratio (EER) and Coefficient of Performance (COP) and show proficiency in EER and COP calculations
- Application of the Air Conditioning Star Ratings to Industrial facilities
- Gas and electric heating options and air (ducted) heating
- Operation of an air conditioning system and describe each component including the compressor, evaporator, condenser, expansion valve and fan coil
- Ceiling and pedestal fans and ventilation climate control
- Factors that impact on climate control energy consumption
- Best practice climate control methodology as applied to the Industrial facilities
- Industrial facilities climate control saving opportunities
- Conducting thermal performance assessment of Industrial facilities
- Entertainment and administration services and efficient design encompassing:
- Appliance standby power including the different mode, passive and active standby
- Appliance energy star ratings
- MEPS and labeling requirements for televisions
- Network standby management strategies

- Computer energy consumption including computer power management, entertainment and administration saving opportunities
- Industrial services and efficient design encompassing:
  - Compressed air, hydraulic and steam systems
  - Overview of industrial services in relation to industrial sector
- Compressed air, hydraulic and steam system selection and design

- Compressed air, hydraulic and steam system theory, energy balance for a typical systems in industrial processes
- Energy efficiency pumping compressed air, hydraulic and steam systems design methodology
- Energy efficiency compressed air, hydraulic and steam systems
- Industrial pumping compressed air, hydraulic and steam systems saving opportunities
- Smart metering solutions encompassing:
- Benefits of the different metering available to the industrial sector
- Metering opportunities relation to industrial sector
- Renewable energy (solar PV) encompassing:
- Design of solar PV systems and different panel types including mono-crystalline, poly-crystalline and amorphous
- Solar panel characteristics and choice of selection

- Solar power system utility approval process
  - Balance of systems, rules of thumb, shading, orientation and shading of strings in an on grid solar power system:
  - Solar PV energy calculations and calculate entitlement for a small solar PV system
  - Different feed-in tariff schemes and how they apply to solar PV

UNIT X: DESIGN SIMPLE WATER TREATMENT PLANT 6 HOURS

Specific Objectives

Upon completion of this unit students are competent when they are able to:

10.1 Identify the levels of water treatment processes

Content

To include but not limited to:

- Levels of water treatment processes
- Design of treatment plants

……

ASSESSMENT PROCEDURES

Students will take responsibility for their own academic achievement. Students will demonstrate their commitment to their own goal of educational advancement by attending class, completing assigned work, and complying with existing copyright legislations. To successfully complete this course, a student must pass ALL the different components of the course.

On-going Assessment Requirements			
No.	**Suggested Unit/Unit Cluster**	**Assessment Strategy**	**Weight**
1	**I, II, III,**	Two in-course tests	20%
2		Practical Assignments/Projects	20%
3		Field/Laboratory/Practical Activities	40%
4		Final Assessment	20%
Total			**100%**

FEEDBACK

Students will be given rubrics and grading schemes within the first contact period of the course. Each student will also be given written and oral feedback. Feedback will be immediate and no longer than one week after a task is assessed. Feedback may be documented on assessment evidence.

INSTRUCTIONAL METHODS

Field visits to sites, formal lectures, online activities, Resource Persons, researches and group presentation

FACULTY OF AGRICULTURE	
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO-FOOD PROCESSING
COURSE NAME:	MAJOR CAPSTONE PROJECT
COURSE CODE:	AFP CAP107S4
COURSE HOURS:	45 HOURS (45 Hours Theory)
CREDIT VALUE:	1
PREREQUISITES:	ALL COURSE COMPLETED
YEAR/SEM.:	YEAR 2, SEMESTER 4
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

CAPSTONE EXPERIENCE DESCRIPTION

This major capstone experience is intended to give students the opportunity to integrate the total body of learning experiences gained throughout the program duration. Students will be required to use knowledge, skills and aptitude acquired to design, develop, and prepare implementation strategies for the project assignments indicated here under.

Capstone Assignment Scenario:

This assignment is about new product development. The students are required to research local food from those indicate below, the list is not limited and may include others:

- Fruits
- Vegetables
- Dairy
- Beef
- Poultry
- Pork
- Seafood

- Breadfruit/Banana/Plantain

Scope of assignment activities

You are required to use your learning from the courses of the programme to:

1. Research and develop a new processed food product
2. Develop a marketing plan for the sale of the product
3. Set up a promotional display of the product

The Lecturer will provide the rubrics for the assignment

FACULTY OF AGRICULTURE	
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO-FOOD PROCESSING
COURSE NAME:	ACQUIRING PROFESSIONAL AND INDUSTRY RECOGNITIONS
COURSE CODE:	AFP CERT108S4
COURSE HOURS:	45 HOURS (45 Hours Theory)
CREDIT VALUE:	1
PREREQUISITES:	COMPLETION OF YEAR TWO COURSES
YEAR/SEM.:	YEAR 2, SEMESTER 4
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DESCRIPTION

This Professional Recognitions Development Programme is designed to provide the students with the opportunity to pursue professional and industrial recognitions' programmes which will lead them acquiring professional and or industry certification, licenses' or licensure. These types of recognitions will in addition, to their educational and or training institutional certification gives them a high level of employment standing and competitiveness in their sector of employment and career paths.

PROGRAMME DESCRIPTION

This Professional Recognitions Development Programme is designed to provide the students with the opportunity to pursue professional and industrial recognitions' programmes which will lead them acquiring professional and or industry certification, licenses' or licensure. These types of recognitions will in addition, to their educational and or training institutional certification gives them

a high level of employment standing and competitiveness in their sector of employment and career paths.

The student should be assigned a workplace mentor and or programme advisor who will facilitate and guide the student's goal achievements towards professional recognitions. The students should be encouraged to commence these pursuits before the completion of their course of study

PROGRAMME OBJECTIVES COMPETENCY OUTCOME

The recognitions programme is integral to the implement of the delivery of the Renewable Energy Technology Programme. In the main it is a non-credit programme of 45 hours duration. Institutions are encourage to use creative strategies administer its implementation. There a variety of teaching and learning modalities that may be used in attaining the programme's objectives.

The programme objectives are:

1. Expose students to the need for accuracy professional and/or industry recognitions
2. Enhance students understanding of the social-economic and cultural impacts of Professional and Industrial Recognitions.
3. Develop in students professional ethics, business protocols good personality traits, habits and professionalism
4. Pursue Professional Recognitions as part of their life-long learning strategies
5. Use Professional Recognitions to continuously improve work processes, productivity and value creation.
6. Use Professional Recognitions for competitive advantages in the workplace.
7. Comply with legislations, regulations and related conventions governing occupational professional practices.
8. Recognize the aims of Professional Recognitions on the public's health, safety and security
9. Recognize the intent of Professional Recognitions to enhance compliance with requirements of the Fair Trading Act, Consumer Protection Act. And the provision of Quality Customer Services.
10. Recognize the importance in becoming involved in Voluntarism

UNIT I: VALUE THE ROLE OF REGULATORS AND PROFESSIONAL ORGANZIATIONS IN PROFESSIONAL/INDUSRTIAL RECOGNITIONS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

1.1 Analyze the role of professional organizations and regulations in professional and industrial recognitions

1.2 Determine the impact of professional/ industrial recognitions on socio-economic and cultural variables

1.3 Recognize the value of regulations in achieving societal and/or commercial objectives

1.4 Recognize the function of various government agencies involvement in food safety and security

Content

To include but not limited to:

- Legislations, regulation and policies relating to Renewable Energy Sector and other related Sectors and encompassing:
  - Food Safety and Security
  - OHS

UNIT II: ACQUIRE PROFESSIONAL RECOGNITION FOR INDUSTRIAL PRACTICE

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

8.1 Explain the importance of having professional recognition for industry practice

8.2 Identify and differentiate types of professional/ industry recognitions

8.3 Seek and determine requirements for professional/industry recognitions

8.4 Enroll in training programmes for professional/industry recognitions

8.5 Access and complete programs of study for professional/ industry recognitions

8.6 Apply to appropriate awarding bodies for registration and professional/industry recognitions

8.7 Adhere to professional ethics code of preface and quality of service requirements of the recognition

8.8 Adhere to recertification requirements

Content

- To include but not limited to:

- Types of recognitions
- Licensing
- Permits
- Licensure ship
- Industry awards
- ISO certification
- Other international recognitions/awards
- Other local recognitions/award

Professional Body: Jamaica Agricultural Society(JAS)

Recognition of Awarding Bodies:

Agriculture

Kansas Dept. of Agriculture	General Certificate in Agriculture,
	State Pesticide Applicator
US Dept. of Agriculture	Certified Organic Producer
Kansas Dept. of Health and Environment	Water Treatment (Water and Waste) Cert.

Occupational Health and Safety(OHS)

National Association of Safety Professionals	Chemical Safety Technician
	Hazard Analysis Technician
	Licensed Safety Professional

Plant Systems

NOCTI	Floriculture, Horticulture
	Agriculture Production

Animal Science/System

NOCTI	Small Animal Science
American Association for Laboratory Science	Lab. Animal Technician
	Lab. Animal Technologist
Kansas Extension Service	Tractor Safety Certificate

UNIT III: ACQUIRE TRAINING AND OR RECOGNITION IN APPLYING FIRST AID

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

3.1 Explain the importance of applying first aid

3.2 Adhere to the principle of first aid when addressing issues requiring first aid

3.3 Acquire first aid training and certification

3.4 Follow procedures in applying first aid techniques

3.5 Evaluate situation above own competence level and seek appropriate assistance and seek appropriate assistance

3.6 Contact relevant to authorities in event of serious emergencies

3.7 Report and/or document incidents/accidents and actions taken

3.8 Follow up with persons who have had first aid treatment and/or resolution to their problems

Content

To include but not limited to:

- Basic first aid procedure
- Sources of assistance
- Company nurse/doctor
- Employees with first aid training/certification
- Emergency Agencies:
- Fire brigade
- Police
- Ambulance/ Paramedics
- First Aid procedures

Certification

Red Cross of Jamaica Training and Certification Programmes CPR/ First Aid Cert.

American Red Cross CPR/ First Aid Cert.

UNIT IV: PARTICIPATE IN ACTIVITIES OF PROFESSIONAL ORGANIZATIONS

Specific Objectives

Upon completion of this unit, students are competent when they are able to:

4.1 Conduct research on professional organization of interest

4.2 Interview person having connections with the particular organization.

4.3 Analyze data/information obtained on organization of interest

4.4 Evaluate the compatibility level of own professional goals with that of the organization.

4.5 Collect information on procedures for membership in the organization

4.6 Apply for membership in organization of interest

4.7 Participate and contribute to the activities of the organization of interest

4.8 Take opportunities to exchange learning with other members

4.9 Take actions to grow and develop professional internally and externally to the organization

4.10 Transfer knowledge gained from association with the organization to the workplace and other colleagues

Content

To include but not limited to:

- Research on organization:
- Vision. Mission and Goals
- Membership categories (Full, Associate, Affiliate, Students)
- Professional Development Programmes
- Fee Structure
- Application Procedures
- Programme of Activities
- Organization Structure
- Transfer of Learning
- Life Long Learning Opportunities
- Compatibility Evaluation

UNIT V: BUILD PROFESSIONAL RECOGNITION THROUGH VOLUNTARISM

Specific Objective

Upon completion of this course, students are competent when they are able to:

5.1 Investigate the role of voluntarism in developing communities

5.2 Explore the roles of voluntarism building and developing competencies

5.3 Investigate voluntarism as a vehicles for transfer of leering and life category

5.4 Use voluntarism to develop appropriate values and attributes

5.5 Interview person who have been awarded natural honors for voluntarism and public service

5.6 Identify and acquire critical knowledge, skills and attributes through voluntarism

5.7 Use voluntarism to seek motivation and inspiration of others

5.8 Prepare and present report on voluntary project/activities

Content

To include but not limited to:

- Role of voluntarism
- Building
- Building personal, social and technical competencies
- Interview National Awardees
- Acquire knowledge skills and attributes
- Socio-cultural skills
- Leadership skills
- Economic skills
- Organizational Skills
- Negotiation Skills
- Mediation skills
- Historical knowledge
- Counseling skills
- Social justice
- Motivational and Inspirational Group
- Youths
- Young adults
- Adults

- Development Nature of Voluntarism
- Benefits of Voluntarism
- Values and Attitudes
- Love of Country
- Self-Empowerment

AWARDS:

- The Gleaner Annual Award for Voluntarism
- Government of Jamaica National Honours

ASSESSMENT PROCEDURES

Students will take responsibility for their own academic achievement. Students will demonstrate their commitment to their own goal of educational advancement by attending class, completing assigned work, and complying with existing copyright legislations. To successfully complete this course, a student must pass ALL the different components of the course.

On-going Assessment Requirements			
No.	**Suggested Unit/Unit Cluster**	**Assessment Strategy**	**Weight**
1		Student Daily Logs	20%
2		Appraisal by employer and tutor	20%
3		Written report on experience	40%
4		Hands-on Experience	20%
Total			**100%**

FACULTY OF AGRICULTURE	
PROGRAMME:	OCCUPATIONAL ASSOCIATE DEGEE IN AGRO-FOOD PROCESSING
COURSE NAME:	EXTERNSHIP (WORK PLACE ATTACHMENT)
COURSE CODE:	AFP EMP108S2
COURSE HOURS:	240 HOURS (15 Hours Theory and 225 Hours Practical)
CREDIT VALUE:	4
PREREQUISITES:	NONE
YEAR/SEM.:	YEAR 1 - SUMMER
APPROVED BY:	CENTRE OF OCCUPATIONAL STUDIES

COURSE DESCRIPTION

This Externship/Work Place Attachment Programme is designed to provide the students with industrial /business placement commensurate with their chosen career. The placement is 240 hours in duration and is intended to give students on-the-job experience appropriate to their occupational area(s) of study. During this period the students are to receive at least one visit from the Tutor and

or the Programme Coordinator/Advisor. The student should be assigned a workplace mentor who will facilitate the student's integration into and work experiences in the organization.

LEARNING OUTCOMES AND INSTRUCTIONAL OBJECTIVES

Upon completion of this attachment programme students will be able to relate to concepts, theories and techniques, which are studied, to develop and practice a range of technical competencies, personal competencies and social competencies; help students to identify and develop career paths with in their industry. It will also encourage students to develop important employability skills make contacts with potential employers and to construct work experience profiles commensurate with the demands of future employers and or explore entrepreneurial opportunities.

Upon successful completion of this attachment programme, students are competent when they are able to:

1 Practice theoretical principles.
2 Follow work instructions.
3 Adhere to organizations policies
4 Comply with relevant legislations, regulations and codes of practices
5 Comply with safety requirements
6 Acquire/develop competencies in their occupational area.
7 Apply procedures for work processes.
8 Analyze work plans and implement as instructed
9 Manage area of specialization.
10 Plan, organize and implement tasks/assignments according to given instructions and or procedures.
11 Work effectively as part of a team.
12 Practice employability skills on the job.
13 Be productive, efficient, effective, cost controlled and quality focused
14 Provide excellent customer service
15 Adhere to Dress Codes and Interpersonal Relations Standards
16 Conduct research industry trends, document lessons learned, prepare career development plan, prepare and submit report

ASSESSMENT

On-going Assessment Requirements			
No.	**Suggested Unit/Unit Cluster**	**Assessment Strategy**	**Weight**
1		Student Daily Logs	10%
2		Appraisal by employer and tutor	20%
3		Written report on experience	100%
4		Hands-on Experience	60%
Total			**100%**

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