1. Course Description

Scope, importance and key concepts in agricultural processing engineering. Importance properties of Agricultural materials in processing. Determination and measurement of properties of solid agricultural materials (physical, electrical, mechanical, biochemical properties). Determination and measurement of properties of fluid agricultural materials (types of fluids, viscosity, rheological properties, fluid statics, fluid flow).

2. Course Objectives

The main objective of the course is to equip students with an understanding of the scope and key concepts in the processing of agricultural produce to enable them to understand the operations in the agro-processing industry.

The Specific Objectives include:
1. To introduce students to the scope, importance and key concepts of the agro-processing industry
2. To equip students with knowledge on the importance, use and determination of properties of solid agricultural materials in processing
3. To equip students with knowledge on the importance, use and determination of properties of fluid agricultural materials in processing.

3. Recommended Texts


<table>
<thead>
<tr>
<th>TOPIC</th>
<th>CONTENT</th>
<th>METHOD OF INSTRUCTION / Time allocated</th>
<th>TOOLS / EQUIPMENT NEEDED</th>
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</thead>
<tbody>
<tr>
<td>LECTURE 1. INTRODUCTION</td>
<td>• Scope, importance and key concepts in agricultural processing engineering</td>
<td>Interactive lectures (5 hrs)</td>
<td>Chalk / BB LCD and computer</td>
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</tbody>
</table>
| LECTURE 2 | • Importance properties of Agricultural materials in processing.  
• Visit to processing Industry | Interactive lectures (2 hrs)  
Field trip (3hrs) | Chalk / BB LCD and computer  
transport |
| LECTURE 3 | • Importance, determination and measurement of physical properties.  
• Determination of size, shape, surface area, volume, porosity, bulk density, specific gravity | Interactive lectures (6 hr)  
Practical (6 hrs) | Chalk / BB LCD and computer  
Selected crop, Well equipped food processing lab |
| LECTURE 4. | • Importance (electrical sensing elements) determination and measurement of electrical properties  
• Determination of electrical conductance, resistivity | Interactive lectures (2hrs)  
Practical (3hrs) | Chalk / BB LCD and computer  
Selected crop, Well electrical lab |
| LECTURE 5 | • Determination and measurement of mechanical (texture and solid rheological) properties.  
• Determination of hardness, bending strength, bending stress, crispness | Interactive lectures (7 hr)  
Practical (3hrs) | Chalk / BB LCD and computer  
Selected crop, Well equipped food lab |
| LECTURE 6 | • Determination and measurement of biochemical properties.  
• Proximate Analysis | Interactive lectures (2hrs)  
Practical (3hrs) | Chalk / BB LCD and computer  
Selected food, Well equipped food processing lab |
<table>
<thead>
<tr>
<th>LECTURE 7.</th>
<th>3 hrs</th>
<th>Chalk/BB</th>
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<tbody>
<tr>
<td>Test</td>
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<thead>
<tr>
<th>LECTURE 9.</th>
<th>Interactive lectures (3hrs)</th>
<th>Chalk / BB LCD and computer</th>
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<tr>
<td>Types of fluids, viscosity importance, determination and measurement of static properties of fluids, rheology of fluids</td>
<td>Practical (3hrs)</td>
<td>Selected food, Well equipped food processing lab</td>
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<tr>
<td>Determination of viscosity and rheological properties of fluids</td>
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<thead>
<tr>
<th>LECTURE 10</th>
<th>Interactive lectures (3hrs)</th>
<th>Chalk / BB LCD and computer</th>
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<tbody>
<tr>
<td>Fluid flow, flow measurement and pump selection.</td>
<td>Tutorials (3hrs)</td>
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<tr>
<th>LECTURE 11</th>
<th>Tests (3 hrs)</th>
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<tr>
<td>Test 2</td>
<td></td>
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| Final Exams |               |   |

5. SUMMARY OF TIME NEEDED

Interactive lectures 30 hrs
Tutorials practicals, field trip 24 hrs
Evaluation (tests) 06 hrs

6. OVERALL COURSE EVALUATION

Continuous Assessment Test 20%
Class practicals, Assignments 20%
Final examination 60%