

<b>1. Module details</b>	
<b>Module name</b>	<b>REFRIGERATION AND FOOD STORAGE TECHNOLOGY</b>
<b>Nominal duration</b>	One module It is anticipated that students will achieve the competencies specified in 35 to 40 hours.
<b>Module codes</b>	<b>EA138</b>
<b>Discipline code</b>	
<b>2. Module purpose</b>	To enable students to identify common causes of food spoilage and describe the principles and processes used commercially for the preservation of food.
<b>3. Prerequisites</b>	Nil
<b>4. Relationship to competency standards</b>	TBA
<b>5. Content</b>	<ol style="list-style-type: none"> <li>1. Food spoilage and possible causes <ul style="list-style-type: none"> <li>- physical damage</li> <li>- animal activity</li> <li>- chemical breakdown</li> <li>- enzyme activity</li> <li>- micro-organisms</li> <li>- effects of temperature change</li> <li>- effects of humidity change</li> <li>- effects of freezing on fresh produce</li> <li>- effects of slow freezing time</li> <li>- effect of refreezing</li> </ul> </li> <li>2. Food preservation <ul style="list-style-type: none"> <li>- removing or taking out a reactant</li> <li>- removing or inactivating the catalyst</li> <li>- reducing temperature</li> <li>- changing the reaction system</li> <li>- irradiation</li> </ul> </li> <li>3. Micro-organisms <ul style="list-style-type: none"> <li>- conditions for growth</li> <li>- potentially hazardous foods</li> <li>- cross contamination</li> </ul> </li> <li>4. Identification of food spoilage <ul style="list-style-type: none"> <li>- recognition and suggest possible cause</li> <li>- physical damage</li> <li>- animal activity</li> </ul> </li> </ol>

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## 6. Learning outcome details

### Learning outcome 1

#### Assessment criteria

- chemical breakdown
  - enzyme activity
  - micro - organisms
5. Types of heat processing techniques
- heat processing using steam and water
  - blanching
  - pasteurisation
  - sterilisation
  - evaporation
  - heat processing using hot air
  - dehydration
  - baking and roasting
6. Types of chilling processing techniques
- chilling and controlled atmosphere storage
  - freezing
  - freeze drying and freeze concentration
  - modified atmosphere combined with low temperature cryovac.

On the completion of this module, the learner will be able to:

Identify the main reasons for food spoilage.

Written short answer tests.

1.1 State the main reasons for food spoilage.

1.2 List the effects on food products of the above reasons.

### Learning outcome 2

State the 4 methods used to slow down the rate of food deterioration.

#### Assessment criteria

Written short answer test.

2.1 State the 4 methods used to reduce food spoilage.

2.2 List 2 examples of each.

### Learning outcome 3

Identify the conditions for growth of micro-organisms and the foods which most affected.

#### Assessment criteria

Written short answer test.

3.1 List the conditions that must exist for the growth of micro-organisms.

3.2 List 8 food types that are affected by micro-organisms.

### Learning outcome 4

From observation suggest reasons for food spoilage.

<b>Assessment criteria</b>	<p>Practical</p> <p>4.1 Suggest/identify the cause(s) of food spoilage from 4 selected examples.</p>
<b>Learning outcome 5</b>	State the types of heat processing techniques.
<b>Assessment criteria</b>	<p>Written short answer test.</p> <p>5.1 State 5 types of heat processing, used in food preservation.</p>
<b>Learning outcome 6</b>	Describe the types of chilling processing techniques.
<b>Assessment criteria</b>	<p>Written short answer test.</p> <p>6.1 Identify the 3 chilling techniques used in food preservation.</p>
<b>7. Assessment Strategies</b>	See Assessment Criteria
<b>8. Module Delivery Strategies</b>	<p>The module provides for delivery by off-the-job training in a variety of modes.</p> <p>Assessment instruments will need to be developed by the module provider. These instruments will need to reflect consistency with stated module learning outcomes and related assessment criteria.</p> <p>Alternative assessment procedures will need to be considered, and applied as appropriate to student's needs.</p>
<b>9. Resource Requirements</b>	<p>Australian Refrigeration and Air Conditioning, Vol I &amp; II, CR&amp;D Project Trust Publication.</p> <p>Dossat R.J, Principles of Refrigeration 2nd ed., SI Version, John Wiley &amp; Sons, New York, USA.</p> <p>Ashrae Handbook, Refrigeration Systems and Applications, SI Version, ASHRAE, Atlanta, USA</p>
<b>10. Occupational health and safety requirements</b>	<p>Learners must be made aware of all relevant OH&amp;S issues in all situations and are required to demonstrate safe working practices at all times.</p> <p>All work areas must comply with current OH&amp;S legislation.</p>