

# **MODULE DOCUMENTATION**

## **Advanced Food Science -**

### **Food Processes**

#### **MANF07002**

Mandatory

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<b>Full Title</b>	Advanced food science - food processes		
<b>Status</b>	Uploaded to Banner	<b>Start Term</b>	2017
<b>NFQ Level</b>	07	<b>ECTS Credits</b>	05
<b>Module Code</b>	MANF07002	<b>Duration</b>	Semester - (13 Weeks)
<b>Grading Mode</b>		<b>Department</b>	Culinary Arts
<b>Module Author</b>	Francesco Noci		

### Module Description

This module introduces the student to the unit operations and technologies currently used in food production. The focus of the module is on topics such as processing, mass and heat transfer, and preservation. This module will also explore the practical application of the scientific principles underpinning the processes used in food preservation.

### Learning Outcomes

**On completion of this module the learner will/should be able to:**

1. Explain the physicochemical changes that happen in food during maturation, storage, processing
2. Describe technologies and function of processing equipment used during the manufacturing process of selected food commodities.
3. Describe the impact of novel technologies in food processing on safety and quality of foods.
4. Identify the key processing factors that determine the effectiveness of conventional and novel food processing technologies
5. Apply various processing techniques depending on their suitability for liquid and solid food processing

### Indicative Syllabus

Fundamentals of mass and heat transfer

Thermal processes

Fermentation (beer, cheese and yogurt) .

Separation Technologies; sedimentation, centrifugation, chromatography; distillation and evaporation.

Drying technologies (roller, spray, freeze, fluidised bed)

Filtration; depth and cross flow.

Membrane processes; reverse osmosis, microfiltration, ultrafiltration

Novel technologies for food processing: high hydrostatic pressure, pulsed electric field, high intensity light, ultrasound

Thickeners and Gels: science, ingredients, techniques

Foaming: Science, Ingredients, Techniques

Emulsions: Science, Ingredients, Techniques

Preservation techniques:

heating, dehydration, freezing, irradiation, sterilisation, preservatives and additives.

### Teaching and Learning Strategy

The teaching and learning strategy for this module consists of a combination of theory lectures, practical activities in a laboratory setting and food manufacturing site visits that can strengthen the understanding of the theoretical concepts

**Assessment Strategy**

The assessment strategy consists of a end of semester exam, the evaluation of a group based project work based on industry visits, in class testing based on both theory classes and laboratory practical classes

**Repeat Assessment Strategies**

Reassessment of this module will consist of a repeat examination

<b>Indicative Coursework and Continuous Assessment:</b>		<b>50 %</b>		
<b>Form</b>	<b>Title</b>	<b>Percent</b>	<b>Week (Indicative)</b>	<b>Learning Outcomes</b>
Project	Project	30 %	OnGoing	2
Assessment	Test	20 %	Week 12	1,3,5

<b>End of Semester / Year Formal Exam:</b>		<b>50 %</b>		
<b>Form</b>	<b>Title</b>	<b>Percent</b>	<b>Week (Indicative)</b>	<b>Learning Outcomes</b>
Closed Book Exam	Exam	50 %	End of Semester	1,2,3,4

<b>Full Time Delivery Mode Average Weekly Workload:</b>			<b>4.00 Hours</b>		
<b>Type</b>	<b>Description</b>	<b>Location</b>	<b>Hours</b>	<b>Frequency</b>	<b>Weekly Avg</b>
Practical	Practical	Laboratory	2	Weekly	2.00
Lecture	Lecture	Lecture Theatre	2	Weekly	2.00

**Recommended Reading Book List**

Fellows, J., (2000). *Food Processing Technology: Principles and Practice (Woodhead Publishing in Food Science and Technology)*. Woodland Publishing.  
ISBN 1855735334 ISBN-13 9781855735330

(2015). *Handbook of Food Processing: Food Preservation (Contemporary Food Engineering)*. CRC Press.

Zhang, Q., Barbosa-Cnovas, V., Bala, V M., Dunne, C., Farkas, F., , J., (2011). *Nonthermal Processing Technologies for Food*. John Wiley :-:- Sons, 4 Feb 2011.

**Online Resources**

<http://www.nzifst.org.nz/unitoperations/>

**Programme Membership**

GA\_OCGSG\_B07 202000 Bachelor of Arts in Culinary and Gastronomic Sciences  
GA\_OCGSG\_H08 202000 Bachelor of Arts (Honours) in Culinary and Gastronomic Sciences