



<b>Title:</b>	App Food Pres & Food Science	<b>APPROVED</b>
<b>Long Title:</b>	App Food Pres & Food Science	
<b>Module Code:</b>	FOOD8007	<b>Duration:</b> 1 Semester
<b>Credits:</b>	10	
<b>NFQ Level:</b>	Advanced	
<b>Field of Study:</b>	Food Processing	
<b>Valid From:</b>	Semester 2 - 2021/22 ( January 2022 )	
<b>Module Delivered in</b>	<a href="#">2 programme(s)</a>	
<b>Module Coordinator:</b>	Noel Murray	
<b>Module Author:</b>	Siobhan Gough	
<b>Module Description:</b>	This module allows students to further develop their scientific knowledge and culinary skills regarding the functional properties of various food commodities. During this module students will investigate and apply principles of food processing, food preservation and principles of sensory sciences; examined with a theoretical and practical lens ensuring consolidated learning.	
<b>Learning Outcomes</b>		
<i>On successful completion of this module the learner will be able to:</i>		
LO1	Analyse the different processing techniques employed domestically and in the food industry sector.	
LO2	Investigate the factors related to the growth, survival and death of microorganisms.	
LO3	Evaluate the role of food additives.	
LO4	Examine and critically apply a range of preservation strategies employed in food processing.	
LO5	Critically demonstrate scientific principles underpinning functional and fundamental processes in the preparation, storage and cooking of various food commodities.	
LO6	Demonstrate principles of sensory science in the undertaking of sensory tests.	
<b>Pre-requisite learning</b>		
<b>Module Recommendations</b>		
<i>This is prior learning (or a practical skill) that is strongly recommended before enrolment in this module. You may enrol in this module if you have not acquired the recommended learning but you will have considerable difficulty in passing (i.e. achieving the learning outcomes of) the module. While the prior learning is expressed as named MTU module(s) it also allows for learning (in another module or modules) which is equivalent to the learning specified in the named module(s).</i>		
<b>Incompatible Modules</b>		
<i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module. You may not earn additional credit for the same learning and therefore you may not enrol in this module if you have successfully completed any modules in the incompatible list.</i>		
No incompatible modules listed		
<b>Co-requisite Modules</b>		
No Co-requisite modules listed		
<b>Requirements</b>		
<i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed. You may not enrol on this module if you have not acquired the learning specified in this section.</i>		
No requirements listed		

**Module Content & Assessment**

**Indicative Content**

**Processing techniques**

Methods of preservation - blanching, canning and bottling, pasteurisation and sterilisation, low temperature preservation, drying and water activity, irradiation. Types and functions of packaging, modified atmosphere packaging. Effects of preservation techniques on quality and nutritional value of food.

**Principles of Food Spoilage and Food Poisoning**

Fundamental knowledge of high-risk foods, the signs of food spoilage and how to prevent it. Causes and signs of food poisoning. Characteristics of bacteria, moulds, yeasts, viruses and microbial growth. Food poisoning organisms; food borne diseases.

**Food Additives**

Types and classifications of food additives. Functionality and practical applications of these additives. Regulation and control of food additives.

**Application of Preservation Techniques**

Sugar, salt, pH in the preparation of chutneys, pickles, marmalades, jams and preserves. Application of freezing; ice-cream and sorbets, blanching and freezing. All underpinned by key factors, underlying scientific principles and where appropriate working principle e.g. ice-cream maker. Advantages/strengths and limitations, packaging and labelling.

**Applied Scientific Principles**

Denaturation and coagulation of proteins, syneresis, Maillard Reaction, rancidity of fats, foam formation, emulsions, gelatinisation of starch, gel formation, dextrinisation of sugar, caramelisation of sugars, fermentation, osmosis, raising agents.

**Sensory Science:**

Sensory Evaluation, physiology of the senses, application of sensory analysis vocabulary, categories of sensory methods; analytical (discrimination, descriptive) and affective (preference, hedonic) methods, presentation of results; Quantitative Descriptive Analysis Spider graph, sensory analysis conditions, application of sensory tests and uses of sensory analysis.

**Assessment Breakdown**

	%
Course Work	100.00%

**Course Work**

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Project	Create a product using a processing technique covered in class. Undertake shelf life testing. Organise, run and write up sensory analysis tests on the product.	4,5,6	40.0	Week 9
Written Report	Write a report (5000 words) to accompany the product detailing the scientific principles underpinning functional and fundamental processes in the preparation, storage and cooking of the chosen product.	1,2,3	60.0	Sem End

No End of Module Formal Examination

**Reassessment Requirement**

**Coursework Only**

*This module is reassessed solely on the basis of re-submitted coursework. There is no repeat written examination.*

**The institute reserves the right to alter the nature and timings of assessment**

**Module Workload**

<b>Workload: Full Time</b>				
<i>Workload Type</i>	<i>Workload Description</i>	<i>Hours</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lab	Kitchen and lab based practical	3.0	Every Week	3.00
Lecture	Theory	2.0	Every Week	2.00
Independent Learning	Research and reading	9.0	Every Week	9.00
Total Hours				14.00
Total Weekly Learner Workload				14.00
Total Weekly Contact Hours				5.00

<b>Workload: Part Time</b>				
<i>Workload Type</i>	<i>Workload Description</i>	<i>Hours</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lab	Kitchen and lab based practical	3.0	Every Week	3.00
Lecture	Theory	2.0	Every Week	2.00
Independent Learning	Research and Reading	9.0	Every Week	9.00
Total Hours				14.00
Total Weekly Learner Workload				14.00
Total Weekly Contact Hours				5.00

## Module Resources

### Recommended Book Resources

- Gill, R. 2018, *Larder: From Pantry to Plate*, 1st Ed., Absolute Press [ISBN: 9781472948540]
- Nosrat, S. 2017, *Salt, Fat, Acid, Heat: Mastering the Elements of Good Cooking*, Canongate Book [ISBN: 9781782112303]
- Rahman, M.S 2020, *Handbook of Food Preservation*, 3rd Ed., CRC Press New York [ISBN: 9781498740487]
- Nak-Eon, C., & Jung, H. 2015, *How Flavour Works*, Wiley Blackwell [ISBN: 978111886547]
- McGee, Harold 2004, *On Food and Cooking*, Scribner [ISBN: 0648480012]
- Walden, H. 1999, *Sensational Preserves*, Conran [ISBN: 10:1840910585]
- Fellows, P.J. 2016, *Food Processing Technology*, 4th revised Ed., Woodhead Publishing Ltd. [ISBN: 9780081019078]
- Juneja, V.K., Dwivedi, H.P. and Sofos, J.N. 2019, *Microbial Control and Food Preservation: Theory and Practice*, Springer New York [ISBN: 9781493975563]
- Saint-Denis, C.Y. 2018, *Consumer and Sensory Evaluation Techniques: How to Sense Successful Products*, Wiley New Jersey [ISBN: 9781119405542]
- Stone, H., Bleibaum, R.N. and Thomas, H.A. 2020, *Sensory Evaluation Practices*, Elsevier Science & Technology San Diego [ISBN: 9780128153345]
- Tortora, G., Funke, B.R., Case, C.L., Weber, D. and Bair, W.B. 2018, *Microbiology: An Introduction*, 13th Ed., Benjamin/Cummings [ISBN: 9780134774305]
- Varzakas, T. and Tzia, C. (eds.) 2015, *Handbook of food processing*, CRC Press [ISBN: 9780429157370]

### Supplementary Book Resources

- Clark, S., Jung, S. and Lamsal, B. 2014, *Food Processing: Principles and Applications*, 2nd Ed., Wiley Somerset GB [ISBN: 9781118846292]
- Campbell-Platt, G. 2017, *Food Science and Technology*, 2nd Ed., Wiley Blackwell [ISBN: 9780470673423]

### Recommended Article/Paper Resources

- International Federation for Home Economics *International Federation for Home Economics*  
[www.ifhe.org](http://www.ifhe.org)
- International Journal of Home Economics *International Journal of Home Economics*  
<https://www.ifhe.org/ijhe/about-the-journal/>

### Other Resources

- Website: *Food Processing Industry News*  
<http://www.foodprocessing.com>
- Website: *Food Processing Whitepapers*  
<http://www.fponthenet.net/index.aspx>
- Website: *Food Safety Authority of Ireland*  
<http://www.fsai.ie>
- Website: *Health Protection Surveillance Centre*  
<http://www.hpsc.ie>
- Website: *Safefood*  
<https://www.safefood.net/professional/food-safety/resources-for-food-businesses/safefood-for-life>

**Module Delivered in**

<b>Programme Code</b>	<b>Programme</b>	<b>Semester</b>	<b>Delivery</b>
CR_FHOEC_8	<a href="#"><u>Professional Diploma in Education - Home Economics</u></a>	3	Group Elective 1
CR_FHOEC_8	<a href="#"><u>Professional Diploma in Education - Home Economics</u></a>	4	Group Elective 1