

Subject Description Form

Subject Code	ABCT4413
Subject Title	FOOD PROCESSING II
Credit Value	3
Level	4
Pre-requisite	Food processing I (ABCT3413)
Objectives	This subject aims to teach students the application of the major principles and current practices of food processing technology as well as the effects of processing parameters on food product quality. Emphasis will be placed on the integration and application of the food engineering principles food preservation, and processing methods and the common types of processing equipment to the manufacture of various food products. Advanced/unconventional technologies for food processing will also be introduced.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> apply the fundamental principles of food engineering, food preservation and processing; appraise critically the advantages and limitations of various food processing techniques; recognize the effect of processing conditions on food product quality; demonstrate skills in information acquisition as well as problem-solving abilities; appreciate the recent developments in food processing technology.
Subject Synopsis/ Indicative Syllabus	<p><u>Processing of fruits and vegetables</u> Processing and storage of fresh fruits and vegetables; respiration, transpiration and decay of fresh fruits and vegetables; CAP and MAP of fruits and vegetables; manufacture of dried fruits and vegetables, frozen fruits and vegetables, pickled vegetable and canned fruits with examples.</p> <p><u>Processing of cereals and cereal products</u> Processing and storage of grains; processing of flour from wheat; manufacture of ready-to-eat breakfast cereals, bread and bakery products, paste products and snack foods with examples.</p> <p><u>Processing of fluid beverages</u> Classification of beverages; processing of carbonated soft drinks, fruits and vegetable juices, beer and wine; manufacture of bottled water, orange juice, soymilk and beer with examples.</p> <p><u>Processing of milk and dairy products</u> Composition of milk and dairy products; basic steps in milk processing; manufacture of fluid milk products, concentrated milk products, dry milk products, yogurts, butter, cheese and ice cream with examples.</p> <p><u>Processing of Other Food Products</u> <u>Meats and seafoods:</u> Processing and storage of fresh red meats; processing of cooked meats and cured meats, poultry and seafood; manufacture of cooked sausages, fermented sausages, ham, frozen chicken parts, canned tuna and dried</p>

	<p>seafood.</p> <p><u>Coffee and tea:</u> Basic processing steps and storage of roasted whole coffee and instant coffee; classification of tea; basic processing steps and storage of black tea and green tea; manufacture of coffee and tea with examples.</p> <p><u>Confectionery:</u> Classification and composition of sugar confectionery and chocolate; manufacture of candy and chocolate with examples.</p> <p><u>Fermentation technology and fermented food products</u> Fermentation concepts and principles; microbial growth kinetics; common food fermentation processes and products (Baker's yeast, alcoholic drinks, dairy fermentation products, vinegar, and soy sauce); Functional foods from fermentation (probiotics and gut microbiota).</p> <p><u>Food Packaging</u> <u>Introduction:</u> causes of food spoilage and deterioration; the function of packaging; package strategy.</p> <p><u>Packaging with various materials:</u> Properties, manufacturing and applications of paper and paperboard, metal, glass, plastics; combined package systems.</p> <p><u>Packaging of fresh and processed foods:</u> milk and dairy products; meat and seafood; fruits and vegetables; cereal and cereal products; beverage products.</p> <p><u>Other Methods of Food Processing</u> An introduction to selected topics on other methods and recent developments in food processing and packaging such as extrusion, microwave processing, high pressure processing, ultrasound technology; tamper-evident packaging, microwaveable packaging, active packaging and edible films.</p>																																																				
Teaching/Learning Methodology	<p>Keynote lectures with guided reading will be used to cover the main theme of the subject matter. Both qualitative and quantitative approaches will be taken to integrate various background disciplines of microbiology, chemistry, and engineering principles into the processing of various food products. Exercises in various forms (e.g. multiple choice questions, discussion questions, and calculations) will be designed to enhance students' learning of the subject matters. Mini-projects will be assigned to students individually or in groups to develop students' self-learning ability in food processing technology.</p>																																																				
Assessment Methods in Alignment with Intended Learning Outcomes	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods</th><th rowspan="2">% weighting</th><th colspan="6">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th></tr> <tr> <th>a</th><th>b</th><th>c</th><th>d</th><th>e</th><th></th></tr> </thead> <tbody> <tr> <td>1. Course work</td><td>30</td><td>√</td><td>√</td><td>√</td><td></td><td>√</td><td></td></tr> <tr> <td>2. Mini-projects</td><td>20</td><td>√</td><td>√</td><td>√</td><td>√</td><td>√</td><td></td></tr> <tr> <td>5. Final exam</td><td>50</td><td>√</td><td>√</td><td>√</td><td></td><td>√</td><td></td></tr> <tr> <td>Total</td><td>100 %</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes.</p>							Specific assessment methods	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)						a	b	c	d	e		1. Course work	30	√	√	√		√		2. Mini-projects	20	√	√	√	√	√		5. Final exam	50	√	√	√		√		Total	100 %						
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Student Study Effort Expected	Class contact:	
	▪ Lecture	26 Hrs.
	▪ Tutorial	13 Hrs.
	Other student study effort:	
	▪ Assignments	20 Hrs.
	▪ Self-study	48 Hrs.
	Total student study effort	107 Hrs.
Reading List and References	<u>Essential</u> Smith, J.S. and Hui, Y.H., Food Processing: Principles and Applications; Blackwell Publishing 2004 Robertson, G.L., Food Packaging: Principles and Practice (3rd ed.); Taylor & Francis 2011 <u>Supplementary</u> Hui, Y.H., Handbook of Food Products Manufacturing, John Wiley & Sons, Inc 2007 Fellows, P.J., Food Processing Technology: Principles and Practice (4th ed.); Woodhead 2017	