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Course Outlines

FOODI MSc in Food Processing and Innovation

MSc course in Food Processing and Innovation / FOODI

FOODI Work Package 2 (WP2): Development
WP2 Lead HEI: University College Dublin
D2.5: Course Outlines

Course Outlines

(as a component of
the FOODI
Teacher's Guide)

Project Information

Project Acronym:	FOODI
Project full title:	MSc Course in Food Processing and Innovation
Project No:	598987-EPP-1-2018-1-MY-EPPKA2-CBHE-JP
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Reviewed by the FOODI Quality Team

Table of Contents

Course Title:	Food Science & Technology			
Course Code:	FOODI Pre-requisite Course			
Course Type:	Core ☐ Elective ☒			
Course Coordinator:	Margaret (UiTM), PSU			
Credits:	ECTS 2	Level:	9	Semester: 1

A. Course Description
This course provides an introduction to food science and technology. It provides students with a general introduction to the food components and nutrients, food microbiology, preservation and processing of food commodities, food quality and safety, legislation and regulation.

B. Course Learning Outcomes. On completion the student will be able to:	
1.	Describe food components and their role in food
2.	Differentiate food quality attributes and apply appropriate evaluation methods.
3.	Classify microbes in food.
4.	Describe and apply the principles of food preservation and processing.
5.	Classify hazards in food.
Transferable Skills Knowledge, communication, writing	

C. Assessment Strategies:		
	Assessment Type	Percentage of Final Marks
☒	Final Exam (FEX)	30
☒	Progress Test (PT)	10
☒	Presentation (PRS)	20
☐	Portfolio (PTO)	
☐	Multiple Choice Exam (MCQ)	
☒	Assignment (ASM)	40
☐	Design Project (DPR)	
☐	Debate (DEB)	

D. Indicative Student Workload:	Indicative hours
Class Contact: Lectures	2 hrs x 14 weeks = 28

Class Contact: Small Group Discussions or online	
Class Contact: Workshops	
Specified learning activities	
Blended learning activities	8
Autonomous student learning	
Group-based learning	
Assignment	15
Assessment (self-learning)	12
Report	12
Presentation	8
Total hours	83

E. Indicative Content		
Topic	Content	Content Sources/Resources (e.g. texts, web resources, journal articles, equipment resources)
Chemistry of food components	1.1) Carbohydrates – classification, structure, chemical reactions and functional properties of sugars and polysaccharides 1.2) Proteins – classification, structure of amino acids and protein, chemical reactions and functional properties of proteins 1.3) Lipids – structures and types of lipids, chemical reactions and functional properties of lipids 1.4) Vitamins and Minerals – sources and classification 1.5) Water – types and function 1.6) Nutrition - nutrient requirement and Food Guide Pyramid 1.7) Allergens/antinutrients	Bennion, M. and Scheule, B. (2015). *Introductory Foods*, 14 Ed., Pearson Education Inc. United Kingdom. ISBN-13: 978-0132739276 Murano, P.S. (2007). *Understanding Food Science and Technology*, Thomson Wadsworth Australia. ISBN-13: 978-0534544867 Parker, R. and Pace, M. (2017). *Introduction to Food Science and Food Systems*, 2nd Ed., Cengage Learning USA. ISBN-13: 978-1-4354-8939-4 Jeantet, R., Croguennec, T., Schuck, P. and Brulé, G. (2016). *Handbook of Food Science and Technology 1: Food Alteration and Food Quality*, John Wiley & Sons, Inc. ISBN-13: ISBN: 978-1-848-21932-8 Reference Book Resources deMan, J.M. Finley, J., Hurst, W.J. and Lee, C. (2018). *Principles of Food Chemistry*, 4 Ed., Aspen Publishers Inc. ISBN-13: 978-3-319-63607-8 Sikorski, Z.E. (2002). *Chemical and Functional Properties of Food Components*., CRC Press Boca Raton. ISBN-13: 978-0-8493-9675-5 Fennema, O. Damodran, S. and Parkin, K. (2017). *Food Chemistry*, 5 Ed., Apple Academic Press Inc. Canada. ISBN-13: 978-1-4822-0812-2
Food Quality	2.1) Food quality attributes (colours, texture and flavour) 2.2). Evaluation of food quality (instrumental and sensory evaluation)	
Food Microbiology	3.1) Introduction to food microbiology 3.2) Beneficial microbes in foods 3.3) Food spoilage microbes in foods 3.4) Foodborne pathogen	
Food preservations and processing	4.1) Principles of food preservation and processing (thermal and non- thermal processing) 4.2) Preservatives	
Food safety	5.1) Definition of food safety	

	5.2) Microbiological, chemical and physical hazards 5.3) Personal hygiene, Halal, HACCP and GMP	

Course Title:	Research & Investigative Processes (or Research Methodology) (or Research Methodology & Investigative Processes)			
Course Code:	FOODI Core 1			
Course Type:	Core ☒ Elective ☐			
Course Coordinator:	Prof Dr Ramesh T Subramaniam (UM)			
Credits:	ECTS: 6	Level:	9	Semester:

A. Course Description
The course will provide knowledge and expertise to the postgraduate students to enable them to select the appropriate research methods for their current and future research activities. The content of the course covers an introduction to research methodology, preparing a research proposal, writing a literature review, experimental design, data analysis, report/thesis writing, presentation techniques and ethics in research.

B. Course Learning Outcomes. On completion the student will be able to:	
1.	Identify the correct research methodology for their research activities
2.	Design experiments suitable for their chosen research project
3.	Analyse critically the research literature relevant to their respective project requirements
4.	Produce a research proposal at the end of the course.
Transferable Skills Communication Skills, Critical Thinking and Problem Solving Skills, Life Long Learning and Information Management	

C. Assessment Strategies:		
	Assessment Type	Percentage of Final Marks
☐	Final Exam (FEX)	
☐	Presentation (PRS)	40
☐	Portfolio (PTO)	
☐	Multiple Choice Exam (MCQ)	
☐	Assignment (ASM)	30
☐	Design Project (DPR)	30
☐	Debate (DEB)	

D. Indicative Student Workload:	Indicative hours
Class Contact: Lectures	36
Class Contact: Small Group Discussions or online	16

Class Contact: Workshops	12
Specified learning activities	28
Blended learning activities	28
Autonomous student learning	32
Group-based learning	8
…	
…	
Total hours	160

G. Indicative Content		
Topic	Content	Content Sources/Resources (e.g. texts, web resources, journal articles, equipment resources)
1.	Introduction	Walker, I.R. (2011). *Reliability in Scientific Research,* Cambridge University Press. ISBN-13: 978-0-5117-8060-8 Lecture notes
2.	Research Topic	Marder, M.P. (2011). *Research Methods for Science,* Cambridge University Press. ISBN-13: 978-1-1390-3511-8 Lecture notes
3.	Research Problem	I. R. Walker, above Lecture notes
4.	Research Design	I. R. Walker, above Lecture notes
5.	Sample Design & Sampling	I. R. Walker, above Lecture notes
6.	Hypothesis Testing	Lecture notes
7.	Reviewing the Literature	Lecture notes, Published research papers
8.	Formulating a Research Problem Submission of Literature Review Report	Lecture notes, Published research papers
9.	Identifying Variables	Lecture notes, Published research papers
10.	Selecting a Method of Data Collection	Lecture notes, Published research papers
11.	Writing a Research Proposal Submission of Research Proposal	Lecture notes, Published research papers
12.	Writing a Research Report	Lecture notes, Published research papers
13.	Presentation Format	Marder, M.P. (2011). *Research Methods for Science* (Cambridge University Press, 2011). ISBN-13: 978-0-5117-8060-8 Lecture notes
14.	Research Ethics Presentation	Lecture notes

Course Title:	Food Quality & Sensory Science			
Course Code:	FOODI Core 2			
Course Type:	Core ☒ Elective ☐			
Course Coordinator:	NorIza (UniKL)			
Credits:	6 ECTS / 4 credit	Level:	9	Semester:

A. Course Description
In the production and processing of foodstuffs, food quality and safety are integrated concepts which apply throughout the whole food chain. The effective management of food quality and safety are intrinsic to the success and security of food businesses. This Course provides an understanding of quality assurance and quality management principles and practices as applied throughout the food processing, manufacturing and retailing industries. The aim of the Course is to provide students with key insights to the subject of quality control and analysis of food, gaining knowledge and practice that can be applied directly in the workplace. Fundamentals of quality control and their industrial application through physical, chemical, microbiological, statistical and sensory methods will be studied.

B. Course Learning Outcomes. On completion the student will be able to:	
1.	Evaluate the importance of quality assurance and quality control in manufacturing of food products
2.	Demonstrate competency in the use of standard techniques of food analysis and the treatment of experimental data
3	Comprehend the principles of various food analysis techniques.
4.	Demonstrate among team members the ability for self-directed learning and reflective practice in the workplace
Transferable Skills: time management, communication	

C. Assessment Strategies:		
	Assessment Type	Percentage of Final Marks
☒	Final Exam (FEX)	40
☒	Presentation (PRS)	10
☒	Practical	20
☐	Portfolio (PTO)	
☐	Multiple Choice Exam (MCQ)	
☒	Assignment (ASM)	20
☐	Design Project (DPR)	
☐	Debate (DEB)	

D. Indicative Student Workload:	Indicative hours
Class Contact: Lectures	30
Class Contact: Small Group Discussions or online	20
Class Contact: Workshops / lab	20
Specified learning activities	
Blended learning activities	20
Autonomous student learning	50
Group-based learning	20
…	
…	
Total hours	160

E. Indicative Content		
Topic	Content	Content Sources/Resources (e.g. texts, web resources, journal articles, equipment resources)
1	**Introduction of Quality Control** 1.1 Definition and importance of Quality 1.2 Principles of Quality Control 1.3 Quality attributes of Food – Nutritional quality, Microbial, Sensory 1.4 Official methods of analysis in food industry	Rocha-Lona, L., Garza-Reyes, J.A. and Kumar, V. (2013). *Building Quality Management Systems: Selecting the Right Methods and Tools*. CRC Press. ISBN-13: 978-1-46656-499-2 Kim-Soon, Ng. (2012). *Quality Management and Practices*. Intech. In: Quality Management System and Practices, Edition: 1, Chapter: 1, Publisher: InTech, Editors: Kim-Soon Ng, pp.1-11. ISBN-13:978-953-51-0550-3 Tague, N.R. (2013). *The Quality Toolbox*, Second Edition. ASQ. ISBN-13: 978-0-87389-871-3 **Additional Reference:** Andres, J.V. Quality. (2004). *Assurance for the Food Industries - A Practical Approach*, CRC Press. ISBN-13: ISBN 978-0-84931-912-9 Forsythe, S. J. (2000). *Food Hygiene, Microbiology & Hazard Analysis Critical Control Point (HACCP),* Chapman & Hall. ISBN-13: 978-1-4419-5196-0 Mortimore, S. and Wallace, C. (1998). *HACCP: A Practical Approach*, Kluwer Academic Publishers Group. ISBN-13: 978-1-4614-5028-3 Smith, G.M. (2003). *Statistical Process Control & Quality Improvement*, Prentice Hall. ISBN-13: ISBN-13: 978-0-13049-036-0

2	**Quality programs and quality system for food industry** 2.1 Theories and application 2.2 The structure and principles of TQM 2.3 TQM Tools 2.3.1 Statistical analysis tools 2.3.2 Management and planning tools 2.4 The ISO 9000/ quality system standards	Rocha-Lona, L., Garza-Reyes, J.A. and Kumar, V. (2013). *Building Quality Management Systems: Selecting the Right Methods and Tools*. CRC Press. ISBN-13: 978-1-46656-499-2 Kim-Soon, Ng. (2012). *Quality Management and Practices*. Intech. In: Quality Management System and Practices, Edition: 1, Chapter: 1, Publisher: InTech, Editors: Kim-Soon Ng, pp.1-11. ISBN-13:978-953-51-0550-3 3. Tague, N.R. (2013). *The Quality Toolbox*, Second Edition. ASQ, 2013. ISBN: 978-0-87389-871-3 **Additional Reference:** Andres, J.V. (2004). *Quality Assurance for the Food Industries - A Practical Approach*, CRC Press. ISBN-13: 978-0-84931-912-9 Forsythe, S. J. (2000). *Food Hygiene, Microbiology & Hazard Analysis Critical Control Point (HACCP),* Chapman & Hall. ISBN-13: 978-1-4419-5196-0 Mortimore, S. and Wallace, C. (1998). *HACCP: A Practical Approach*, Kluwer Academic Publishers Group, 1998. ISBN-13: 978-1-4614-5028-3 Smith, G.M. (2003). *Statistical Process Control & Quality Improvement*, Prentice Hall. ISBN-13: ISBN-13: 978-0-13049-036-0
3	**Sampling & analysis of Foods** 3.1 Sampling – Objectives, Guidelines, Methods 3.2 Hazards – Microbial, Physical, Chemical	Nielsen, S.S, (2011). *Food Analysis*, 4th edition. Springer Publishers, New York, NY. ISBN 978-1-4419-1477-4 Nielsen, S.S, (2010). *Food Analysis Laboratory Manual*, 2nd ed. Springer ISBN-10: 1441914625 AOAC Intl. (2007). *Official Methods of Analysis*. Association of Official Analytical Chemists, 18th edition. ISBN-13: 978-0935584783
4	**Microbial analysis of food** 4.1 Microorganisms in foods by cultural, microscopic, physical, chemical methods.	Ray, B. and Bhunia, A. (2013). *Fundamental Food Microbiology*, 5th edition, CRC Press. ISBN-13: 978-1-46656-443-5 Montville, T.J. and Matthew, K.R. (2012). *Food Microbiology: An Introduction*, ASM Press. ISBN-13: 978-1-55581-636-0 Garg N. and Garg K.L. (2010). *Laboratory Manual of Food Microbiology*, I K International Publishing House Pvt. Ltd. ISBN-13: 978-9-38057-801-9

5	**Chemical food analysis** 5.1 Proximate analysis (moisture, fat, protein, carbohydrates, crude fibre) 5.2 Vitamins & minerals	Nielsen, S.S, (2011). *Food Analysis*, 4th edition. Springer Publishers., New York, NY. ISBN-13: 978-1-4419-1477-4 Nielsen, S.S, (2010). *Food Analysis Laboratory Manual*, 2nd ed. Springer ISBN-10: 1441914625 AOAC Intl. (2007). *Official Methods of Analysis*. Association of Official Analytical Chemists, 18th edition. ISBN-13: 978-0935584783
6	**Instrumentation in food analysis** 6.1 Colorimetry and spectroscopy, photometry, electrophoresis; chromatography and spectrophotometry.	Nielsen, S.S, (2011). *Food Analysis*, 4th edition. Springer Publishers., New York, NY. ISBN-13: 978-1-4419-1477-4 Nielsen, S.S, (2010). *Food Analysis Laboratory Manual*, 2nd ed. Springer ISBN-10: 1441914625 AOAC Intl. (2007). Official Methods of Analysis. Association of Official Analytical Chemists, 18th edition.
7	**Sensory analysis** 7.1 Discrimination, description and affective test.	Meilgaard, M.C., Carr, B.T. and Civille, G.V. (2015). *Sensory Evaluation Techniques*, Fifth Edition, CRC Press. ISBN-13: 978-1482216905 Stone, H., Bleibaum, R. and Thomas, H.A. (2012). *Sensory Evaluation Practices*, Fourth Edition (Food Science and Technology), Academic Press. ISBN-13: 978-0123820860

Course Title:	Food Process Design			
Course Code:	FOODI Core 3			
Course Type:	Core ☒ Elective ☐			
Course Coordinator:	Prof. Anil Kumar Anal (AIT)			
Credits: 6 ECTS/ 4 Credits	ECTS	Level:	9	Semester: August

A. Course Description
To provide the core knowledge of food manufacturing by understanding the principles and design procedures of unit operations and their combinations for food processing and preservation.

B. Course Learning Outcomes. On completion the student will be able to:	
1.	Understand the principles and applications of the major food engineering unit operations and their combinations.
2.	Apply the methods and concepts of the innovative processing technologies such as ohmic heating, high pressure processing, supercritical fluid extraction, and other minimal processing technologies etc.
3.	Identify and to evaluate the appropriate unit operations for a particular food manufacturing process.
4.	Evaluate the energy and mass flow rates involved in unit operations.
5.	Think critically and be able to validate the developed/ designed process for industrial applications.
6.	Research a topic, synthesis current information and develop a presentation related to manufacturing process and unit operations in food production systems.
Transferable Skills To be able to communicate independently to transfer the process design and manufacturing process in interdisciplinary areas of food science, technology and entrepreneurship.	

C. Assessment Strategies:		
	Assessment Type	Percentage of Final Marks
☒	Exams (FEX) (Final and Mid)	60%
☒	Presentation (PRS)	15%
☐	Portfolio (PTO)	
☐	Multiple Choice Exam (MCQ)	
☒	Assignment (ASM)	25%
☐	Design Project (DPR)	
☐	Debate (DEB)	

D. Indicative Student Workload:	Indicative hours
Class Contact: Lectures	60
Class Contact: Small Group Discussions or online	30
Class Contact: Workshops	

Specified learning activities	20
Blended learning activities	20
Autonomous student learning	20
Group-based learning	0
Total hours	150

E. Indicative Content

Topic	Contents	Content Sources/Resources (e.g. texts, web resources, journal articles, equipment resources)
1. Thermal processing	1. Concept of Heat Transfer 2. Pasteurization and sterilization 3. Canning, Retort Thermal Processing, and Lethality Computation 4. Heat Penetration Test and Thermal Process Design	Singh, R. P., and Heldman, D. R. (2013). *Introduction to Food Engineering, Enhanced*: Academic Press. ISBN-13: 978-0-12398-530-9 Holdsworth, S. D., Simpson, R. and Barbosa-Cánovas, G. V. (2008). *Thermal processing of packaged foods*, Springer. ISBN-13: 978-3-319-24904-9 Hui, Y. H. et al. (2008). *Food drying science and technology: microbiology, chemistry, applications*, DEStech Publications, Inc. ISBN-13: 978-1-932078-56-5 Sharma, S., Mulvaney, S. H., and Rizvi, S. S. (2000). *Food process engineering: theory and laboratory experiments*: Wiley and sons. ISBN-13: 978-0-471-32241-2 Sharma, K., Mulvaney, S.J. and Rizvi, S.H. (2000). *Food Process Engineering*, John Wiley & Sons, Inc., U.S.A. ISBN-13: ISBN-13: 978-0-471-32241-2 Gould, G.W. (1995). *New methods of food preservation*. Blackie academic & professional. Glasgow. ISBN-13: ISBN 978-1-4615-2105-1 Journals and Magazines: 1) Journal of Food Science, Wiley 2) Journal of Food Engineering, Elsevier 3) Journal of Food Process Engineering, Wiley 4) Journal of Food Processing and Preservation, Wiley 5) Journal of Food Quality, Wiley
2 Food Dehydration	5. Basic principles 6. Spray drying 7. Drum drying 8. Freeze drying 9. Microwave drying 10. Infrared drying	
3. Food freezing	11. Freezing systems and Freezing time 12. Thawing processes: Principles and Applications	
4. Evaporation concentration of liquid foods	13. Boiling-point elevation 14. Types of evaporators 15. Design of evaporators	
I.5. Extrusion cooking of foods	16. Extrusion Principle and mechanism 17. Extruder characterizations	
6. Separation Processes	18. Membrane separation such as membrane filtration, ultrafiltration, reverse osmosis, nanofiltration and electrodialysis 19. Centrifugation	
7. Extraction	20. Principles of Leaching and Factors influencing the rate of extraction 21. Graphical design procedure for extraction systems 22. Supercritical fluid extraction	
8. Non-thermal processing technology in food industry	23. Principles of non-thermal processing of foods 24. High pressure processing 25. Food irradiation 26. Ozone application 27. Pulsed electric field (PEF) 28. Processing using ultrasound	

	29. Cold plasma 30. High Intensity Light Pulses and UV Irradiation	

Course Title:	Processing Effects on Structural & Functional Components of Foods			
Course Code:	FOODI Core 4			
Course Type:	Core ☒ Elective ☐			
Course Coordinator:	Prince of Songkla University, Thailand			
Credits: 6	ECTS	Level:	9	Semester:

A. Course Description
This course will provide advanced knowledge on the effects of various conventional and innovative processing technologies on food components and their functionalities that affect the quality and safety of the food products.

B. Course Learning Outcomes. On completion the student will be able to:	
1.	Identify the major components and explain their interactions during processing.
2.	Explain the principle of each processing technology and its effect on structural and functional properties of food components.
3.	Identify the positive and negative effects of each processing technology on structural and functional properties of food components and formation of antinutritional or toxic compounds
4.	Implement the solutions to maintain the quality and minimize the antinutritional and toxic compounds
5.	Compose and deliver a presentation on issues related to the effects of food processing technologies on structural and functional components of Foods
Transferable Skills: Communication, Problem solving, Lifelong learning	

C. Assessment Strategies:		
	Assessment Type	Percentage of Final Marks
☒	Final Exam (FEX)	50
☒	Presentation (PRS)	20
☐	Portfolio (PTO)	
☐	Multiple Choice Exam (MCQ)	
☒	Assignment (ASM)	30
☐	Design Project (DPR)	
☐	Debate (DEB)	

D. Indicative Student Workload:	Indicative hours
Class Contact: Lectures	25
Class Contact: Small Group Discussions or online	15
Blended learning activities	10

Autonomous student learning	90
Group-based learning	10
Field trip	3*
Exams	6*
Total hours	150

*Excluding from indicative hour

E. Indicative Content		
Topic	Content	Content Sources/Resources (e.g. texts, web resources, journal articles, equipment resources)
1	Major components and their interactions on structures and functionalities in various foods	Belitz, H.D., Grosch, W. and Schieberle, P. (2009). *Food Chemistry*, 4th revised and extended ed. Springer-Verlag, Heidelberg. ISBN-13: 978-3-540-69934-7. Available from: http:// https://chemistry.com.pk/books/food-chemistry//. [17 February 2020]. Damodaran, S. and Parkin K.L. (2017). *Fennema's food chemistry,* 5th ed., CRC Press, New York. ISBN-13: 9781482208122
2	Antinutritional compounds in raw foods and other ingredients	
3	Effect of chilling and freezing/ thawing processing on structures, functionalities, quality attributes, and toxic/antinutritional compounds of foods	Devahastin, S. (ed) (2011). *Physicochemical aspects of food engineering and processing*. CRC Press, Boca Raton. ISBN 13: 978-1-4200-8242-5 (Ebook-PDF) Fellows, P.J. (2017) *Food processing technology: principles and practice,* 4th ed, Woodhead Publishing, Duxford. ISBN-13: 978-0-08-100523-1 (online) Sun, D.W. (ed) (2014) *Emerging technologies for food processing*, Academic Press, London. ISBN-13: 978-0-12-411479-1
4	Effect of thermal processing (pasteurization, sterilization, drying, evaporation, roasting, baking, frying, and ohmic) on structures, functionalities, quality attributes, and toxic/antinutritional compounds of foods	
5	Effect of microwave, irradiation, UV, radio frequency technology on structures, functionalities, quality attributes, and toxic/antinutritional compounds of foods	
6	Effect of extrusion technology on structures, functionalities, quality attributes, and toxic/antinutritional compounds of foods	Wagner, J.R., Mount, E.M. and Giles, H.F. (2013). *Extrusion: the definitive processing guide and handbook*, 2nd ed. Elsevier Inc. Amsterdam (ISBN-13: 978-1-4377-3481-2) Maskan, M. and Altan, A. (2012). *Advances in food extrusion technology*. CRC press. Boca Raton. (ISBN-13: 978-1-4398-1521-2)
7	Effect of non-thermal processing (High pressure processing (HPP), Pulse electric field (PEF), cold plasma technology	Ahmed, J., Ramaswamy, H.S., Kasapis, S. and Boye, J.I. (2010) *Novel food processing Effects on rheological and*

	(CPT), ozonization, and pulsed light) on structures, functionalities, quality attributes, and toxic/antinutritional compounds of foods	*functional properties* CRC Press, Boca Raton. ISBN-13: 978-1-4200-7119-1 (Hardback) Chauhan, O.P. (2019) *Non-thermal processing of foods*, CRC Press, Boca Raton. ISBN -13: 978-1-1380-3584-3 (Hardback) Moreno, J.J. (ed) (2017) *Innovative processing technologies for foods with bioactive compounds*, CRC Press, Boca Raton ISBN-13: 978-1-4987-1484-6 (Hardback) Ohisson, T. and Bengtsson, N. (2002) *Minimal processing technologies in the food industry*, CRC Press, New York. ISBN-10: 0-8493-1454-2. Sun, D.W. (ed) (2014) *Emerging technologies for food processing*, Academic Press, London. ISBN-13: 978-0-12-411479-1
8	Effect of packing/coating and packaging technology on structures, functionalities, quality attributes, and toxic/antinutritional compounds of foods	Pau, T., Maria, J.F. and Amparo, C. (2010) *Edible polysaccharide films & coatings*, Nova Science Publishers Inc, New York. ISBN-13: 9781616681913 (Hardback) Cerqueira, M.A.P.R., Pereira, R.N.C., Ramos, O.L.S., Teixeira, J.A.C. and Vicente, A.A. (2016). *Edible food packaging: materials and processing technologies*, CRC Press, Boca Raton ISBN: 9781482234169 (Hardback) Siddiqui, M.W., Rahman, M.S. and Wani, A.A. (2018*) Innovative Packaging of Fruits and Vegetables: Strategies for Safety and Quality Maintenance*, CRC Press, New York. ISBN: 9781771885973 - CAT# N12016 (Hardback) Han, J.H. (2013) *Innovations in food packaging*, Elsevier Science Publishing, United States ISBN: 9780123946010

Course Title:	Business Strategy and Policy			
Course Code:	FOODI Core 5			
Course Type:	Core ☒ Elective ☐			
Course Coordinator:	To be Determined			
Credits:	ECTS 6	Level:	9	Semester: 2

A. Course Description
Enterprises within the food processing industry will continue to be disrupted by complexities of the global external environment as well as the internal organizational ecosystem. While pursuance toward innovation and sustainability are vital, they need to be strategic in exploiting opportunities while tactical in designing policies for internal consistencies. This course offers students the opportunity to gain knowledge and skills in identifying how an entity should compete and sustain in chaotic external and internal business landscapes. This would include understanding how enterprises and firms build and coordinate their tangible and intangible resources to meet market demands with effective innovation.

B. Course Learning Outcomes. On completion the student will be able to:	
1.	Examine how firms face the macro environment of business from the perspective of competition, government policies and nuances of the food processing industry at both global, regional and local level of the food processing industry.
2.	Explore the micro environment of business which includes internal policies, ethics and leadership that influence processes of developing strategies for competitive advantage and organisational sustainability of the food industry.
3.	Apply concepts, models, theories and analytical tools of strategic management processes namely strategic analysis, formulation, implementation and analysis
4.	Elaborate how strategic plans and policies are integrated, executed and controlled to address the cultural, institutional and ethical aspects from a standpoint of managerial leadership perspective.
Transferable Skills Critical thinking, Decision-making/ good judgment, team-work, entrepreneurial skills.	

C. Assessment Strategies:		
	Assessment Type	Percentage of Final Marks
☐	Final Exam (FEX)	
☒	Presentation (PRS)	20
☒	Portfolio (PTO) Write-up of the Business Case related to the specific business in the Field Trip namely: a. Country Analysis (15%), b. Industry Analysis (15%) c. Organizational Analysis (15%) d. Project Strategy/Policy Action Plan (15%)	60
☐	Multiple Choice Exam (MCQ)	

☒	Assignment (ASM) - Case Study Analysis	20
☐	Design Project (DPR)	
☐	Debate (DEB)	

D. Indicative Student Workload:	Indicative hours
Class Contact: Lectures	12
Class Contact: Small Group Discussions or online	12
Class Contact: Workshop	32
Specified learning activities- Seminar (for presentation)	20
Blended learning activities	20
Autonomous student learning	12
Group-based learning	12
Total hours	120 hours

E. Indicative Content		
Topic	Content	Content Sources/Resources (e.g. texts, web resources, journal articles, equipment resources)
Ice-breaking	*Overview, Requirements, Policy, VLE explanation and team-building exercise*	No supporting texts required
Basic Concepts, theories and models of Business Strategy; Corporate Governance and Policy, Social Responsibility and Ethics in Designing Business Strategy and Policy	*(Lecture, Discussion, Literature Review, Case Study analysis)*	Wheelen, T.L, Hunger, J.D., Hoffman, A. N., Bamford, C.E. (2018). *Strategic Management and Business Policy: Globalization, Innovation and Sustainability.* Pearson: United Kingdom. ISBN-13: 9781292215488
Scanning the Macro Environment and Industry Analysis	*Theory and Methodological Tools (PEST – EL -DG) Political, Economic, Social, Technological- Environmental, Legal- Domestic, Global.* *(Lecture, Discussion, Case Studies)*	MSG. (2019), *Strategic Management and Business Policy*, https://www.managementstudyguide.com/strategic-management.htm Porter, M.E and Heppelmann, J. (2019) *Why Every Organization Needs an Augmented Reality Strategy*; https://hbr.org/2017/11/a-managers-guide-to-augmented-reality
Evaluating the Micro Environment – Organizational Analysis and Defining the Competitive Edge	*Lecture, Discussion, Case Studies*	Rumelt, R. (2011). *Good Strategy, Bad Strategy.* Random House: New York. ISBN-13: 9780307886231
Growth Strategies	*Vertical Integration Horizontal Integration Diversification in the same or different sector*	Hitt, M., D.R., Ireland and R.E. Hoskisson (2013). *Strategic Management: Competitiveness and Globalization*, South-Western Cengage

	Strategies in the Product (New Products, New Markets, Competitor's Customers) ** Students must understand how the development of a new product or the diversification of some others can lead to the growth of the enterprise (Innovation by new products).*	Learning, 10th edition. ISBN-13: 978-1-305-50214-7 Grant, R.M. (2010). *Contemporary Strategy Analysis*, Blackwell Publishing, seventh edition. ISBN-13: 978-0470972205 Hill, C. and Jones, G. (2012). *Strategic Management Theory: An Integrated Approach*, South-Western Cengage Learning, 10th edition. ISBN-13: 978-1111825843 Johnson G., Whittington, R. and Scholes, K. (2011). *Exploring Strategy: Text and Cases*, Prentice Hall, 9th edition. ISBN-13: 978-0273735496 Thompson, A.A., Peteraf, M.A., Gamble, J.E. and Strickland III, A.J. (2012). *Crafting and Executing Strategy: Concepts and Readings*, 18th edition, McGraw-Hill Irwin. ISBN-13: 978-0078112720 Lynch R. (2012), *Strategic Management*, Pearson, 6th Edition. ISBN-13: 978-0273750925 David, F.R., (2013). Strategic Management, Pearson, 14th Edition. Pearce J. II and R. Robinson (2012). *Strategic Management: Planning for Domestic and Global Competition*, 13th Edition, Pearson. ISBN-13: 978-0071326391 Markides, C. (2008), *Game-Changing Strategies*, Jossey-Bass. ISBN-13: 978-0470276877 Markides C. (2000). *All the Right Moves: A Guide to Crafting Breakthrough Strategy*, Boston, Harvard Business School Press. ISBN-13: 978-0875848334
Defence Strategies	*Downsizing – Stability - Recovery, Disinvestment*	
Stability Strategies	*No Change* *Profit strategy* *Proceed/pause with Caution*	
Strategic Management Process Application- Strategy Formulation *Business Strategy *Corporate Strategy * Strategy formulation and choice	*Field trip-company visit. One company/semester and each student-groups tackle different issues of the company.* *Once done, group-work will be done in the Workshop. Presentation of the solutions will be done in the Final-day Seminar with panel inclusive of the Company Rep.*	
Strategic Management Process Application- Strategy Implementation and Control *Global Strategy *Organization and Structure *Staffing, Directing and Leading *Evaluation and Control		

Course Title:	Food Safety, Law and Regulation			
Course Code:	FOODI Core 6			
Course Type:	Core ☒ Elective ☐			
Course Coordinator:	Dr. Hasika Mith			
Credits:	6 ECTS	Level:	9	Semester: 2
Course Places	Institute of Technology of Cambodia			

A. Course Description
This course will provide advanced knowledge on food hazards and key food safety issues, how to control the factors influencing safety and to implement management systems to ensure the food safety. It will also provide knowledge on the need for quality assurance, safety, inclusion of novel ingredients, standardization and transparency in the food manufacturing without compromising the nutritional, functional and sensory characteristics.

B. Course Learning Outcomes. On completion the student will be able to:	
1.	Assess and evaluate the key food safety issues, including the food hazards, risks and their sources
2.	Identify the difference between food quality management systems (FQMS) and food safety management systems (FSMS)
3.	Implement quality management and food safety management and audit systems in the food processing industry
4.	Interpret food laws/regulations and apply the relevant and current food safety standards to ensure the production of safe and innovative food products
Transferable Skills Critical thinking, communication, team work, leadership	

C. Assessment Strategies:		
	Assessment Type	Percentage of Final Marks
☒	Final Exam (FEX)	60
☒	Presentation (PRS)	20
☐	Portfolio (PTO)	
☒	Multiple Choice Exam (MCQ)	10
☒	Assignment (ASM)	10
☐	Design Project (DPR)	
☐	Debate (DEB)	

D. Indicative Student Workload:	Indicative hours
Class Contact: Lectures	50
Class Contact: Small Group Discussions or online	20

Class Contact: Workshops	
Specified learning activities	20
Blended learning activities	20
Autonomous student learning	10
Group-based learning	30
…	
…	
Total hours	150

E. Indicative Content		
Topic	Content	Content Sources/Resources (e.g. texts, web resources, journal articles, equipment resources)
Introduction and overview food safety and quality issues	- Food safety vs. food quality - Quality control – quality assurance - Overview on national food legislation - Food labelling and standards - Current issues in food safety	Text & reference books, web resources, journal articles
Current issues and food hazards	- Physical hazards - Biological hazards - Chemical hazards & allergens	Text & reference books, web resources, journal articles
Food laws and regulations	- Fundamentals of food laws - Regulatory requirements for quality and safety of food products and food labelling - Overview of the legal concepts relevant to the control and administration of the food industry - Food consumer protection law and contractual undertakings in respect of food - Food marketing laws	Text & reference books, web resources, journal articles
Food standards	- National and International standards organizations: WHO, FAO, Codex, ISO, EFSA, ASEAN - Food Standards Agency, FDA, EPA	Text & reference books, web resources, journal articles
Food quality management system and food safety management system	- Good Manufacturing Practices (GMPs) and HACCP concept - Principles and practices of FQMS and FSMS/ISO22000 in food processing Quality Management (QM) systems in food industries and food supply chain systems	Text & reference books, web resources, journal articles
Auditing in food processing industries	- Principles, types and methods of auditing - Documentation and reporting	Text & reference books, web resources, journal articles

Course Title:	Food Supply Chain, Traceability and Sustainability			
Course Code:	FOODI Core 7			
Course Type:	Core ☒ Elective ☐			
Course Coordinator:	Prof. Anil Kumar Anal (AIT)			
Credits: 6 ECTS / 4 Credits	ECTS	Level:	9	Semester: August

A. Course Description
The course will provide advanced knowledge of various management issues related to food supply chains, including farm to post-harvest management, and on innovative concepts of sustainability and traceability for maintaining the food quality during processing, storage and distribution.

B. Course Learning Outcomes. On completion the student will be able to:	
1.	Understand the principles and process of traceability and sustainability in food supply chain systems.
2.	Analyse the components of domestic and international food supply chains, to apply logistic management, outsourcing principles.
3.	Apply practices conducive to food security in food supply chain systems.
4.	Apply traceability systems across the food supply chain.
5.	Implement the concepts of sustainability and traceability in food processing and storage.
6.	Research a topic, synthesis current information and develop a presentation related to manufacturing process and unit operations in food supply chain, traceability and sustainability.
Transferable Skills To be able to communicate independently to transfer the requirements and the effects of sustainability and traceability throughout the food supply chain in interdisciplinary areas of food science, technology and entrepreneurship.	

C. Assessment Strategies:		
	Assessment Type	Percentage of Final Marks
☒	Mid and Final Exam (FEX)	50%
☒	Presentation (PRS)	20%
☐	Portfolio (PTO)	
☐	Multiple Choice Exam (MCQ)	
☒	Assignment (ASM)	15%
☒	Design Project (DPR)/ Case study Report	15%
☐	Debate (DEB)	

D. Indicative Student Workload:	Indicative hours
Class Contact: Lectures	60
Class Contact: Small Group Discussions or online	20
Class Contact: Workshops	
Specified learning activities	20
Blended learning activities	15
Autonomous student learning	20
Group-based learning	15
Total hours	150

E. Indicative Content		
Topic	Content	Content Sources/Resources (e.g. texts, web resources, journal articles, equipment resources)
1. Food supply chains and management implications	1. An overview of food supply and value chains 2. Consumer expectation including food quality 3. Factors affecting on food supply chain performances	Christopher, M. (2016). *Logistics & supply chain management*, Pearson UK. ISBN-13: 978-1292083797 Dani, S. (2015). *Food supply chain management and logistics: From farm to fork*, Kogan Page Publishers. ISBN-13: 978-0749473648 Hugos, M. H. (2018). *Essentials of supply chain management*, John Wiley & Sons. ISBN: 978-1-119-46110-4 Newslow, D. (2013). *Food Safety Management Programs: Applications, Best Practices, and Compliance*, CRC Press. ISBN-13: 978-1439826799 Pierre, A. D. & David, P. (2013). *International Logistics, The Management of International Trade Operation*s. Berea: Cicero Books LLC. ISBN-13: 978-0989490603 Pullman, M. & Wu, Z. (2012). *Food supply chain management: Economic, social and environmental perspectives*, Routledge. ISBN-13: 978-0-415-88588-1 (Hardback) Tiwari, B. K., Norton, T. & Holden, N. M. (2013). *Sustainable food processing*, John Wiley & Sons. ISBN-13: 978-0470672235 Vasconcellos, J. A. (2003). *Quality assurance for the food industry: a practical approach*, CRC press. ISBN 9780849319129 Journal and Magazines 1. Journal of supply chain management, John Wiley & Sons 2. Supply Chain Management: An International Journal, Emerald Group Publishing 3. Supply Chain Forum: An International Journal, Taylor & Francis 4. Food Control, Elsevier 5. Food Policy, Elsevier 6. Food Research International, Elsevier 7. Industrial Crops and Products, Elsevier
2. Food production, processing and retail management	4. Raw materials for food production and maintenance of quality 5. Food processing and distribution systems 6. Retail strategy in domestic and international markets	
3. Logistics and transportation management in food supply chain	7. Logistics management and outsourcing 8. The role of transportation in supply chains 9. Trade-offs in transportation network design 10. Temperature, humidity and atmospheric-controlled storage and food supply chains	
4. Traceability in Food Supply Chain Systems	11. Traceability systems across the food supply chains and their applications 12. Traceability for food safety, product withdraw, recall and quality control 13. Technology for traceability systems (Bar code, RFID, DNA proofing, remote sensing etc.)	
5. Sustainability management in food supply chain	14. Principles of Sustainability in a food supply chain 15. Key matrices for sustainability in food supply chain 16. Sustainability and supply chain drivers in food industries 17. Minimization and utilization of the food waste 18. Network design and closed-loop supply chains in food systems	

		8. Postharvest Biology and Technology, Elsevier 9. Trends in Food Science and Technology, Elsevier

Course Title:	MIDAS (Mastering Innovative & Disruptive Approaches for Success)			
Course Code:				
Course Type:	Core ☒ Elective ☐			
Course Coordinator:	UiTM/UTM			
Credits:30	ECTS 30	Level:	8	Semester: 1-3
Course Places	All Partner Institutions			

A. Course Description
Dynamic changes in technology, demographics, globalisation and the environment are creating turbulent, unpredictable marketplaces and raising increasingly complex challenges for the food industry. Business owners, managers and employees need to think differently - more creatively, innovatively and entrepreneurially in order to overcome problems and turn these challenges into opportunities. MIDAS is an acronym for 'Mastering Innovative & Disruptive Approaches for Success'. This course is a journey which will enable students to understand the importance of creative and innovative thinking, enabling them to develop creative confidence, and gain an entrepreneurial mindset. The aim at the end of this journey is that students will have been equipped with the confidence, know-how, tools and techniques to apply innovative & disruptive approaches to problems and challenges in a real world context and to successfully lead change by creating, testing and innovating new methods, approaches, and solutions, translating ideas into value. This course will consist of an Industry Centred Action Research Project which will expose students to a systematic approach of problem solving applied to a real world context to uncover creative insights and innovative solutions which can positively impact the host industry organisation. The course will be organised in a clear, structured process and will require active participation and collaboration, with a number of milestone deliverables such as presentations, a thesis and a reflective journal.

B. Course Learning Outcomes. On completion the candidate will be able to:	
1.	Understand the relevance and importance of creative thinking and innovation and its interconnection with the fundamental skills of teamwork and collaboration to develop creative confidence and successfully come up with creative, innovative problem solving.
2.	Gain an in-depth practical understanding of the five stages of the Design Thinking Framework using a suite of tools and techniques for identifying and defining problems, generating solutions, prototyping and testing, taking an iterative approach to generate solutions that translate ideas into value.
3.	Demonstrate the application of the Design Thinking Framework in the project phase to develop an innovative solution to a real industry problem.
4.	Demonstrate a practical understanding of how an entrepreneurial mindset may be applied to opportunities in a real-world context within existing businesses as well as new ventures.
5.	Develop presentation skills to define and clearly communicate a new business idea or concept in an effective and compelling manner.
6.	Develop an excitement and appreciation of innovation and its value.
7.	Practice self-reflection as a tool for continuous self-improvement, identifying lessons learnt about the process, project and team dynamics.
8.	Build their network of peers spanning numerous disciplines and organisations which will be a valuable support in future career.
9.	Integrate other programme learnings

Transferable Skills Creativity and innovation, critical and divergent thinking, problem-solving and the successful application of this perspective, along with teamwork and collaboration, communication and exposure to professional work environments.

C. Assessment Strategies:	
Assessment Type	Proportion of Final Marks
Active Participation (workshops/colloquiums/activities) (AP)	20% (grade neutral)
Reflections (R)	20%
Presentations (P)	15 %
Project Proposal (PP)	10%
Thesis (T)	30%
Industry Feedback	5 % (grade neutral)

D. Indicative Student Workload:	Indicative hours
Class Contact: Workshops including group-based activities	125
Class Contact: Guest speakers	15
Class Contact: Colloquiums	80
Industry Contact	280
Autonomous student research	250
Total hours	750

E. Indicative Content – please see breakdown by semester below

F: Course Flow - this model is based on 3 semesters and can be adapted as necessary for individual HEI's according to their timetable requirements
The course builds throughout the 3 semesters as a structured 'journey'. Semester 1 will introduce a number of activity based and interactive challenges and community building exercises would allow the group of students to get to know one another, appreciate their diversity of backgrounds and create a safe space for giving and receiving ideas as The aim would be to develop creative thinking by accessing their innate ability to be creative and innovative in its broadest sense. The students would be introduced to the inherent risk of failure in creative thinking and understand the evolution of ideas in a team setting including openness to ideas, how their own skills fit and facing creative conflict. They will be introduced to a number of tools for generating ideas and sources of inspiration and practice how to discuss/identify ideas to progress in team settings and opportunity recognition tools. Realisations the student undergo will result in a shift in mindset which can then be applied going forward.

Introduction of the Design Thinking Framework exemplifies the process of problem solving and how to translate ideas into value. Students are taken through stages of the framework in an experiential way by immersive activities and team challenges. 'Innovation sprints' will be used to give experience to the students of using the framework in real life contexts which could be non-food related or community based.

In Semester 2, the students will take on an individual project, allowing them to use these newly gained skills to explore a product/business/service problem in the food processing industry and explore creative, disruptive ideas and solutions for a food industry host company. The students initial role will be to define or reframe the given problem through contact with the host company in a 'consultative' role, which is best described as a role involving observation, discussion with all stakeholders and empathy mapping to enable them to define the root cause of the problem and identify an opportunity to add value., For students wishing to work within their current industry this offers a chance for the student to step back from the day to day job and view the problem from a new perspective.

They will then have to map their findings and define the problem which they will present to their hosts on 'Disruption Day'.

The first phase is for the students to define or redefine the given problem and develop a problem statement which the students will then propose as the focus of their project, in a written proposal and in a presentation to the host industry.

Semester 3 will then allow the student to progress with their project in collaboration with their host industry, starting with ideation, prototyping and testing. In addition to using the framework, the students will be guided as to how to approach this in a manner that reduces risk taking in the context of business – the 'lean' approach. However, this will be high level and not developed in depth (it will be covered in elective on entrepreneurship for those that wish to pursue a new venture). As the process is iterative, students will find they need to go through the earlier stages of the Design Thinking process again based on feedback and this may result in further ideation and testing with a final solution being presented in both a written format and orally as part of a FOODI conference with the industry hosts present.

Structured colloquium/mentoring is important at all stages of the project as need there is a need for collaboration, support of ideas, injection of different experiences and monitoring that projects are kept on track. It would be the intention that the experiences of the other students in different sectors would all be useful two way input – to aid the progression of each other's projects. These sessions should be attended by students and academic mentors.

Course Title:	Food Packaging			
Course Code:	FOODI Elective 1			
Course Type:	Core ☐ Elective ☒			
Course Coordinator:	UTM - Malaysia			
Credits:6	ECTS	Level:	9	Semester:
Course Places	UTM - Malaysia			

A. Course Description
This Course will expose students to the many functions of food packaging, besides protecting foods, and how food packaging materials affect the environment. Students will become familiar with: key historical aspects of the development of packaging technology and its future direction; design of package materials; testing packaging materials and their performance; safety assessment of packaging materials; the function, material properties, characteristics and package requirements; legal and regulatory considerations; the conversion industry and technology required to deliver packaging solutions demanded by modern consumers including active and intelligent packaging, modified atmospheric packaging, aseptic packaging, biodegradable plastics, food-package interactions, sealing integrity and handling of packages. At the end of the Course students will design their own sustainable innovative smart packaging for groups for perishable food.

B. Course Learning Outcomes. On completion the student will be able to:	
1.	Integrate knowledge of food packaging technologies for transformation of the food industry to produce quality, safe, sustainable and innovative food packaging.
2.	Critically evaluate and apply innovative food packaging technologies for positive disruption and development of the food industry.
3.	Implement legal and regulatory aspects in food packaging operations, and standard analytical and innovative methods in food packaging materials and technologies including digital technologies in smart and active packaging, sealing integrity and handling of packages to monitor the safety and shelf life of packaged foods.
4.	Demonstrate the ability to creatively design and innovate new food packaging that will solve problems in the food packaging industry.
5.	Demonstrate responsibility in planning, resource management, supervision, problem solving and managing work within a team and collaboratively with other teams.
Transferable Skills Creativity/Design Thinking, Teamwork, Communication, Willingness to learn, Ethically responsible.	

C. Assessment Strategies:		
	Assessment Type	Percentage of Final Marks
☒	Final Exam (FEX)	40
☒	Presentation (PRS)	15

☒	Case Study (CS)	10
☐	Multiple Choice Exam (MCQ)	
☒	Assignment (ASM)	15
☒	Design Project (DPR)	20
☐	Debate (DEB)	

D. Indicative Student Workload:	Indicative hours
Class Contact: Lectures	40
Class Contact: Small Group Discussions or online	12
Class Contact: Workshops	
Specified learning activities	25
Blended learning activities	25
Autonomous student learning	40
Group-based learning	8
…	
…	
Total hours	150

E. Indicative Content		
Topic	Content	Content Sources/Resources (e.g. texts, web resources, journal articles, equipment resources)
1. Introduction to food packaging and development of packaging technology	Definition of food packaging, functions, types of packaging materials, printing process, labelling of packaging materials, key historical aspects of the development of packaging technology and its future direction.	Robertson, G.L. (1993). Food Packaging. Principles and practice. Publisher: Marcel Dekker. ISBN-10: 0824787498 Osborn, K.R., Jenkins, W.A. (1992). Plastic Films Technology and Packaging Applications. Publisher: Technomic Publishing Co. Inc. ISBN-13: 978-0877628439 Web resources, journal articles
2. Properties & selection of packaging materials	Tensile strength, tearing and puncture resistance. Theory of permeability, tear strength, gas transmission rate, water vapour transmission rate, prediction of shelf life foods, selection of packaging material for different foods, natural materials, biodegradable and sustainable materials.	Robertson, G.L. (1993). Food Packaging. Principles and practice. Publisher: Marcel Dekker. ISBN-10: 0824787498 Osborn, K.R., Jenkins, W.A. (1992). Plastic Films Technology and Packaging Applications. Publisher: Technomic Publishing Co. Inc. ISBN-13: 978-0877628439 Text & reference books, web resources, journal articles, equipment resources
3. Aseptic packaging of foods	Principles of sterilization, sterilization of packaging material, verification of sterilization process, aseptic packaging system: carton,	Robertson, G.L. (1993). Food Packaging. Principles and practice. Publisher: Marcel Dekker. ISBN-10: 0824787498 Text & reference books, web resources, journal articles

	can, bottle, sachet, pouch and cup systems.	
4. Packaging of microwavable foods	Transparent materials, absorbent and shielding materials, field modifications, safety issues.	Robertson, G.L. (1993). Food Packaging. Principles and practice. Publisher: Marcel Dekker. ISBN-10: 0824787498 Osborn, K.R., Jenkins, W.A. (1992). Plastic Films Technology and Packaging Applications. Publisher: Technomic Publishing Co. Inc. ISBN-13: 978-0877628439 Text & reference books, web resources, journal articles
5. Active and Intelligent packaging	Definition, active packaging systems, intelligent packaging systems: quality indicator, time-temperature indicator, gas concentration indicator, RFID, sealing integrity, safety and regulatory issues.	Robertson, G.L. (1993). Food Packaging. Principles and practice. Publisher: Marcel Dekker. ISBN-10: 0824787498 Osborn, K.R., Jenkins, W.A. (1992). Plastic Films Technology and Packaging Applications. Publisher: Technomic Publishing Co. Inc. ISBN-13: 978-0877628439 Text & reference books, web resources, journal articles
6. Modified Atmosphere Packaging (MAP)	Definition and principles, gases used in MAP, methods creating MAP conditions, equipment for MAP, safety for MAP.	Robertson, G.L. (1993). Food Packaging. Principles and practice. Publisher: Marcel Dekker. ISBN-10: 0824787498 Text & reference books, web resources, journal articles
7. Safety, law and regulatory aspect of packaging and handling of food packages.	Introduction to package selection criteria, migration; law and regulatory of food packaging, safety considerations for plastic, metal, glass and paper packaging, legal requirements for wrapping, packaging and transport hygiene.	Robertson, G.L. (1993). Food Packaging. Principles and practice. Publisher: Marcel Dekker. ISBN-10: 0824787498 Text & reference books, web resources, journal articles

Course Title:	Halal Regulation and Certification			
Course Code:	FOODI Elective 2			
Course Type:	Core ☐ Elective ☒			
Course Coordinator:				
Credits:	6 ECTS /4 credit	Level:	9	Semester:

A. Course Description
The course will present principles of Halal food concepts in Sharie. Students will be exposed to: the main information relating to Halal reference documents, schemes and procedures; the development of Halal documentation, online application and internal Halal audit in halal-based product certification; current issues related to halal food industries. The aim is to train graduates competent in Halal regulation and certification to meet the demand from dynamic industrial sectors, regulatory and other government bodies relevant to Halal activities. The professional certificate-embedded course is recognized by Halal Professional Board (HPB) and will be given to those who are qualified.

B. Course Learning Outcomes. On completion the student will be able to:	
1.	Evaluate Halal guidelines and their implementation according to Islamic law.
2.	Implement Halal management systems in relevant industry.
3.	Demonstrate responsibility in planning, resource management, supervision, problem solving and managing work within a team and collaboratively with other teams.
Transferable Skills Planning, resource management, problem solving, team work and collaboration	

C. Assessment Strategies:		
	Assessment Type	Percentage of Final Marks
☒	Final Exam (FEX)	40
☒	Presentation (PRS)	10
☐	Portfolio (PTO)	
☐	Multiple Choice Exam (MCQ)	
☒	Assignment (ASM)	50
☐	Design Project (DPR)	
☐	Debate (DEB)	

D. Indicative Student Workload:	Indicative hours
Class Contact: Lectures	20
Class Contact: Small Group Discussions or online	20

Class Contact: Workshops	20
Specified learning activities	
Blended learning activities	
Autonomous student learning	50
Group-based learning	40
…	
…	
Total hours	150

E. Indicative Content		
Topic	Content	Content Sources/Resources (e.g. texts, web resources, journal articles, equipment resources)
1	Introduction to Halal principles 1.1. Halal Market 1.2. Shariah Principles 1.3. Principles of Halal and Haram	1. Jabatan Kemajuan Islam Malaysia (JAKIM) (2015). Manual Prosedur Persijilan Halal Malaysia (Online) 2. JAKIM (2012). Halal Assurance Management System of Malaysia Halal Certification (online) 3. Standard Malaysia Department (2009), *MS 1500: 2019 Halal Food – Production, Preparation, Handling and Storage- General Guidelines*, 2nd revision. Additional references: 1. Standard Malaysia Department (2012), MS 2424:2012 – Halal Pharmaceuticals 2. Standard Malaysia Department (2008), MS 2200:PART 1:2008 – Islamic Consumer Goods – PART 1: Cosmetic and Personal Care 3. Standard Malaysia Department (2012), MS 2400:2010 – Halalan – Toyyiban Assurance Pipeline (Part 1, Part 2 & Part 3) 4. JAKIM (2011), Malaysia Protocol for Halal Meat and Poultry Productions 2011
2	Halal Legal Control 2.1 Roles of various agencies 2.2 Halal scheme 2.3 Halal Certification	Halal Executive module, JAKIM, Halal manual procedure, Malaysia Halal standard
4	Halal Quality Assurance 3.1 Halal assurance management system 3.2 Halal assurance system 3.3 Halal critical point	Halal Executive module, JAKIM, Halal manual procedure, Malaysia Halal standard
5	Certification Process Administration	Halal Executive module, JAKIM, Halal manual procedure, Malaysia Halal standard, JAKIM Trial online application

6	Internal Audit	Halal Executive module, JAKIM, Halal manual procedure, Malaysia Halal standard
7	Halal Food Market and Halal Food industries issues	Newspapers and web resources

Course Title:	Strategic Food Marketing			
Course Code:	FOODI Elective 3 (TBC)			
Course Type:	Core ☐ Elective ☒			
Course Coordinator:	UTM - Malaysia			
Credits: 6	ECTS	Level:	9	Semester:

A. Course Description
Food marketing is an interesting and dynamic field of study with new trends and issues requiring strategic decision making and market planning for food industries to take advantages of opportunities and deal with increasing challenges of global competitive environment. The focus will be on helping students develop in-depth understanding of the macro and micro environments effecting the food industry, food supply chain, food consumers and the future outlook in relation to the developments in Industrial Revolution 4.0. The theory of selecting target markets for the food products and the development of the marketing mix (product, price, promotion, distribution) with the aid of market research will be covered. The students will learn how to organize disruptive marketing innovations to drive change in consumer's food choices including the need to develop an appealing product, create effective branding and integrated marketing communication strategies. The course will be taught using cases, lectures, and a major field project with student teams working with food related companies in establishing efficient and sustainable marketing plans.

B. Course Learning Outcomes. On completion the student will be able to:	
1.	Design solutions for sales and marketing problems encountered by the food industry
2.	Evaluate and organise disruptive and effective marketing innovation strategies for organisations
3.	Conduct appropriate sales and market research to address market issues
4.	Display competence in presenting rationale for marketing decisions
5.	Propose marketing concepts - including ethical, entrepreneurial, and sustainable marketing concepts - and plans, through case studies.
Transferable Skills: Advance Knowledge, Communication, Team Working, Research, Managerial and Entrepreneurship skills	

C. Assessment Strategies:		
	Assessment Type	Percentage of Final Marks
☒	Final Exam (FEX)	40
☒	Presentation (PRS)	15
☒	Case Analysis and Discussions (CAD)	15
☐	Multiple Choice Exam (MCQ)	-
☒	Assignment (ASM)	15
☒	Design Project (DPR)	15
☐	Debate (DEB)	-

D. Indicative Student Workload:	Indicative hours
Class Contact: Lectures	20
Class Contact: Small Group Discussions or online	20
Class Contact: Workshops	
Specified learning activities	30
Blended learning activities	20
Autonomous student learning	15
Group-based learning	15
…	
Total hours	120

E. Indicative Content		
Topic	Content	Content Sources/Resources (e.g. texts, web resources, journal articles, equipment resources)
1	**Understanding Food Industry and Food Marketing Management** • Defining food marketing for the new realities including the global environment and the industrial revolutions 4.0 and how these realities leads to changes in competitive environments, consumer behaviours and business model of food industry to be considered by marketers • Explain the integral role of marketing in food supply chain and the importance of marketers to understand the environments of food marketing for effective planning.	Kotler, P. and Keller, Kl. (2018). *Marketing Management*. 15th Edition, New York: Prentice Hall ISBN-1292092629 Kotabe, M. (2017). *Global Marketing Management*, 7th ed., John Wiley. ISBN-1119298849
2	**Developing marketing Strategies and Plans** • Introducing the marketing concepts and values, core competencies and the central role of strategic planning, • Introduce Internal and External environmental analysis including, PESTEL Analysis, SWOT Analysis as well Strategic Business Unit Planning for Food industries • Explain Marketing Plan Criteria • Explain the process of forecasting and demand measurement	Kotler, P. and Keller, Kl. (2018). *Marketing Management*. 15th Edition, New York: Prentice Hall ISBN-1292092629 • Video:The Secret Behind Coco-Cola Marketing Strategy
3	**Capturing Sales and Marketing Insights** • Collecting information & forecasting demand by building the marketing intelligence systems • The marketing research process and developing research plan	Kotler, P. and Keller, Kl. (2018). *Marketing Management*. 15th Edition, New York: Prentice Hall ISBN-1292092629 Kotabe, M. (2017). *Global Marketing Management*, 7th ed., John Wiley. ISBN-1119298849 • Selected Marketing Case

4	**Connecting with Consumer Markets** • Creating long-term loyalty relationships by understanding the customer value, satisfaction and loyalty • Analysing consumer markets including cultural, social and personal aspects influencing behaviours • Buying decision process through the Five Stages Model	Kotler, P and Keller, Kl, (2018). *Marketing Management*. 15th Edition, New York: Prentice Hall ISBN-1292092629 Kotabe, M. (2017). *Global Marketing Management*, 7th ed., John Wiley. ISBN-1119298849
5	**Connecting with Business Markets** • Analysing business markets including the participants and the buying process • Tapping into global markets and understand consumer perceptions of country of origin in food marketing	Kotabe, M. (2017). *Global Marketing Management*, 7th ed., John Wiley. ISBN-1119298849 • Selected Journal article
6	**Segmentations, Targeting and Positioning to Build Strong Brand** • Identifying market segments and targets by understanding bases for segmentations in consumer and business markets • Targeting appropriate segments • Crafting brand positioning	Kotler, P. and Keller, Kl. (2018). *Marketing Management*. 15th Edition, New York: Prentice Hall. ISBN-13: 9780133856460 • Video: Market Segmentation
7	**Building Strong Brands** • Creating brand equity, how branding works, measuring brand equity • Choosing competitive frames • Addressing competition & driving growth by understanding the product life cycle marketing strategies	Kotler, P. and Keller, Kl. (2018). *Marketing Management*. 15th Edition, New York: Prentice Hall ISBN-13: 9780133856460 • Video: The Truth Behind Brands' Secret Formulas & Recipes
8	**Setting Food Product Strategy** • Food Product Characteristics and classifications • Packaging, Labelling and Warranties • Designing & managing Food related services • Achieving excellence in Food service marketing	Kotler, P. and Keller, Kl. (2018). *Marketing Management*. 15th Edition, New York: Prentice Hall ISBN-13: 9780133856460 Kotabe, M. (2017). *Global Marketing Management*, 7th ed., John Wiley. ISBN-13: 978-1-119-29871-7
9	**Developing Food Pricing Strategy** • Understanding Pricing and its changing environment • How companies do Pricing • Developing pricing strategies	Kotler, P. and Keller, Kl. (2018). *Marketing Management*. 15th Edition, New York: Prentice Hall ISBN-13: 9780133856460 • Selected Marketing Case
10	**Delivering Value Through Effective and Integrated Channels** • Importance of channels, digital channel revolutions • Designing and managing integrated marketing channels • The channel functions and flows • Managing retailing, wholesaling, logistic system and effective Supply Chain	Kotler, P. and Keller, Kl. (2018). *Marketing Management*. 15th Edition, New York: Prentice Hall ISBN-13: 9780133856460 • Selected Marketing Case • Video: Wholesaling & Retailing

11	**Mass Communications, Advertising, Sales Promotions, Events and Public Relations** • Designing integrated marketing communications • Managing mass communications	Kotler, P and Keller, Kl, (2018). Marketing Management. 15th Edition, New York: Prentice Hall ISBN-13: 9780133856460 • Selected Marketing Case • Video: Integrated Marketing Communication
12	**Digital Communications, Online, Social Media and Mobile** • Managing digital communications and Social media Platforms • Managing personal and integrated communications • Mobile Marketing	Kotler, P. and Keller, Kl. (2018). *Marketing Management*. 15th Edition, New York: Prentice Hall ISBN-13: 9780133856460 Solomon, T.T.M. (2017). *Social Media Marketing*, 3rd Edition, Pearson Education Ltd. UK. ISBN-9781473913011
13	**Personal Selling and Personal Communications: Direct and Database Marketing** • Direct Marketing • Customer Database • Managing Sales Force	Kotler, P. and Keller, K.l. (2018). *Marketing Management*. 15th Edition, New York: Prentice Hall ISBN-13: 9780133856460 Kotabe, M. (2017). *Global Marketing Management*, 7th ed., John Wiley. ISBN-1119298849 • Selected Marketing Case
14	**Conducting Marketing Responsibly for Long Term Success** • Managing Holistic Marketing • Socially Responsible Marketers • Ethical and Sustainable Marketing	Kotler, P. and Keller, Kl. (2018). Marketing Management. 15th Edition, New York: Prentice Hall ISBN-13: 9780133856460 Kotabe, M. (2017). Global Marketing Management, 7th ed., John Wiley. ISBN-1119298849

Course Title:	Nutrition and Health			
Course Code:	FOODI Elective 4			
Course Type:	Core ☐ Elective ☒			
Course Coordinators:	Dr Hasika Mith			
Credits:	ECTS : 6	Level:	9	Semester: 2

A. Course Description
This course provides an understanding of the role of food and nutrition in health. The topics covered will include: micro and macro nutrients and their food sources; nutrient requirements and food-based dietary guidelines; the concepts of energy and nutrient balance; over - and under-nutrition. Students will be introduced to some of the evidence relating nutrients and diet to health and chronic disease prevention. In addition, students will also gain an understanding of the challenges of ensuring food and nutrition security which relies on the adequate supply of safe, affordable and nutritious fresh and processed foods in order to meet the regions Sustainable Development Goals

B. Course Learning Outcomes. On completion the student will be able to:	
1.	Interpret and explain the theory and processes of food digestion and absorption
2.	Interpret and explain biological functions and interactions between macronutrients and micronutrients
3.	Analyze issues and address any health issues related to undernutrition as well as overnutrition
4.	Understand relationships between food, nutrition and health
5.	Understand how to monitor and evaluate food intake according to one's daily nutritional needs
6.	Identify nutritional needs/deficits in specific target groups and understand the regions nutrition strategy
7.	Compose and deliver a presentation on a solution to a nutrition-related issues
Transferable Skills Communication Skills, Critical Thinking and Problem Solving Skills, Life Long Learning and Information Management	

C. Assessment Strategies:		
	Assessment Type	Percentage of Final Marks
☒	Final Exam (FEX)	20
☒	Presentation (PRS)	30
☐	Portfolio (PTO)	
☒	Multiple Choice Exam (MCQ)	20
☒	Assignment (ASM)	30
☐	Design Project (DPR)	
☐	Debate (DEB)	

Note: Assignment 1 - group - 'citizens daily diet' - both written report (15 %) and group presentation (15%); Assignment 2 - individual - 'solution to a nutrition issue' - both written report (15 %) and group presentation

(15%). Therefore, presentations contribute 30% of final mark while assignments, in the form of written reports also contribute 30% of final marks.

D. Indicative Student Workload:	Indicative hours
Class Contact: Lectures	48
Class Contact: Small Group Discussions or online	24
Class Contact: Workshops	8
Specified learning activities	8
Blended learning activities	16
Autonomous student learning	16
Group-based learning	16
Total hours	150 - 180

E. Indicative Content		
Topic	Content	Content Sources/Resources (e.g. texts, web resources, journal articles, equipment resources)
1. Introduction to nutrition & health: Basic concepts and society	- Introduction to nutrition - Basic concepts - Overnutrition and malnutrition	1. Bender, D., A. (2005*). Introduction to Nutrition and Metabolism*. (2nd Ed.), London: Taylor & Francis Ltd. 2. Gibney, M., J., Lanham-New, S., A., Cassidy, A., & Vorster, H., H. (2009). *Introduction to human nutrition*. (2nd Ed.). Singapore: Wiley-Blackwell. 3. Mann, J. & Truswell, A., S. (2012). *Essentials to human nutrition*. (4th Ed.). Oxford: Oxford university press. 4. James, L. S. & Elizabeth, J. (2007). *Food Labeling Compliance Review*. (4th Ed.). ISBN: 978-0-813-82181-8 5. Prakas on Cambodian Standard CS 001-2000. Labelling Food Product. Available at, http://www.cambodiaip.gov.kh/DocResources/fd2f5db5-5b83-4886-b471-40c33d9ed20d_c786a043-b88d-4f64-9429-60a330efdc5f-en.pdf 6. Bagchi, D. (2008). *Nutraceutical and Functional Food Regulations in the United States and Around the World.* Second Edition. ISBN-13: 978-0-12-405870-5 7. Lucky Iron Fish: Shape of Health. https://www.youtube.com/watch?v=KJM7Nj1DCwk 8. Albert, J. (2014). *Innovations in Food Labelling*. ISBN 1845697596 9. Human digestive system - HD Animation. https://www.youtube.com/watch?v=4dG2PYD94es
2.Carbohydrate and health	- Carbohydrate digestion and absorption - Carbohydrate metabolism - Introduction to carbohydrate and health - Health effects of sugar - Replacing sugar by non-nutritive sweeteners - Health effects of fiber - Lactose intolerance - Diabetes	
3. Lipid and health	- Lipid digestion and absorption - Lipid metabolism - Fat tissues - Essential fatty acids - Introduction of lipid and health - Cardiovascular disease and atherosclerosis - Cardiovascular risk factors - Dietary lipids	

4. Proteins and health	- Protein digestion, absorption, and synthesis - Protein functions - Protein turnover and nitrogen balance - Protein quality and recommendations - Potential health effects of proteins	10. Joshua, R. & Tom, M. (2002). *The Energy Balance Diet*. ISBN 0028643585.
5. Energy homeostasis and energy balance ;8uu	- Introduction to energy homeostasis and energy balance - Energy balance - Regulation of food intake - Energy value of nutrients - Energy expenditure - Weight gain and loss	
6. Assignment on the Cambodian, Thai or Malaysian citizen's daily diet	Group project (5 per group). Formulating a Research Problem. Submission of Literature Review Report. Submission of result and conclusion.	Develop Questionnaire for a target group (e.g. students, the elderly, office employees). [ethical approval may be required?] [compare with dietary recommendations; energy intake of individuals in the target group of interest; identify weaknesses in their research approaches; Give a conclusion on the results] *Dietary based guidelines,* *Nutrition at different life-stages/specific groups*
7. Water, Vitamin, and Minerals and health	- Introduction to vitamins - Introduction to the vitamins and dietary reference intakes - Causes of vitamin deficiency - Introduction to water and minerals - Roles of water in the body - Water balance - Health effects of water - Mineral overview - Sodium and potassium - Calcium - Iron - Other trace elements - Dietary supplements	1. Bender, D., A. (2005). *Introduction to Nutrition and Metabolism*. (2nd Ed.), London: Taylor & Francis Ltd. 2. Gibney, M., J., Lanham-New, S., A., Cassidy, A., & Vorster, H., H. (2009). *Introduction to human nutrition*. (2nd Ed.). Singapore: Wiley-Blackwell. 3. Mann, J. & Truswell, A., S. (2012). *Essentials to human nutrition*. (4th Ed.). Oxford: Oxford university press. 4. James, L. S. & Elizabeth, J. (2007). *Food Labeling Compliance Review*. (4th Ed.). ISBN: 978-0-813-82181-8 5. Prakas on Cambodian Standards CS 001-2000. Labelling Food Products. Available at, http://www.cambodiaip.gov.kh/DocResources/fd2f5db5-5b83-4886-b471-40c33d9ed20d_c786a043-b88d-4f64-9429-60a330efdc5f-en.pdf 6. Bagchi, D. (2008). *Nutraceutical and Functional Food Regulations in the United States and Around the World.* https://doi.org/10.1016/B978-0-12-373901-8.X0001-7 7. Lucky Iron Fish: Shape of Health. https://www.youtube.com/watch?v=KJM7Nj1DCwk

		8. Albert, J. (2014). *Innovations in Food Labelling*. ISBN 1845697596 9. Human digestive system - HD Animation. https://www.youtube.com/watch?v=4dG2PYD94es 10. Joshua, R. & Tom, M. (2002). *The Energy Balance Diet*. ISBN 0028643585.
8. Presentation	Literature reviews Presentation journal articles/Results of assignment	-Journal articles (It can be selected by students) -Survey results from the assignment
9. Weight management	- Introduction to weight management - Metabolic syndrome - Assessing obesity - Health risks of obesity - Causes of obesity - Possible solutions for obesity Introduction to the metabolic syndrome	1. Bender, D., A. (2005). *Introduction to Nutrition and Metabolism*. (2nd Ed.), London: Taylor & Francis Ltd. 2. Gibney, M., J., Lanham-New, S., A., Cassidy, A., & Vorster, H., H. (2009). *Introduction to human nutrition*. (2nd Ed.). Singapore: Wiley-Blackwell. 3. Mann, J. & Truswell, A., S. (2012). *Essentials to human nutrition*. (4th Ed.). Oxford: Oxford university press. 4. James, L. S. & Elizabeth, J. (2007). *Food Labeling Compliance Review*. (4th Ed.). ISBN: 978-0-813-82181-8 5. Prakas on Cambodian Standard CS 001-2000. Labelling of Food Product. http://www.cambodiaip.gov.kh/DocResources/fd2f5db5-5b83-4886-b471-40c33d9ed20d_c786a043-b88d-4f64-9429-60a330efdc5f-en.pdf 6. Bagchi, D. (2008). *Nutraceutical and Functional Food Regulations in the United States and Around the World*. Second Edition. ISBN-13: 978-0-12-405870-5. 7. Lucky Iron Fish: Shape of Health. https://www.youtube.com/watch?v=KJM7Nj1DCwk 8. Albert, J. (2014). *Innovations in Food Labelling*. ISBN 1845697596

		9. Human digestive system - HD Animation. https://www.youtube.com/watch?v=4dG2PYD94es 10. Joshua, R. & Tom, M. (2002). *The Energy Balance Diet.* ISBN 0028643585. 11. https://www.gainhealth.org *Regional nutritional strategies that are in place*

Course Title:	Entrepreneurship			
Course Code:	FOODI Elective 5			
Course Type:	Core ☐ Elective ☒			
Course Coordinator:	To be Determined			
Credits:	ECTS 6	Level:	9	Semester: 1

A. Course Description
This course offers an overview of entrepreneurship for students either from business or non-business specializations who lean toward creating a start-up or leading organizations with an entrepreneurial mindset and approach. While concepts and theories of entrepreneurship are central to this course, students will also be exposed to a set of tools, techniques and processes for identifying and enhancing the right competencies to create newness that benefit themselves and positively impact the world around them.

B. Course Learning Outcomes. On completion the student will be able to:	
1.	Explain the fundamental concepts, theories, practices and roles of entrepreneurship in supporting growth of economy and society.
2.	Explore the process of new venture creation by understanding the nature of entrepreneurial activities, challenges and opportunities from entrepreneurial cases in the food industry.
3.	Develop critical thinking, idea generation, decision making abilities and entrepreneurial leadership to analyze scenarios of selected entrepreneurial ventures such as family business, gender-based start-ups, cooperatives, small business entrepreneurship, scalable start-ups, social entrepreneurship and corporate entrepreneurship in the food industry.
4.	Communicate an effective new business concept that has been devised based on industry analysis and personal creativity by addressing economic, social, ethical and cultural issues for specific food entrepreneurial ventures.
Transferable Skills Communication, decision-making, problem solving, team-work, leadership, entrepreneurial skills.	

C. Assessment Strategies:		
	Assessment Type	Percentage of Final Marks
☐	Final Exam (FEX)	
☒	Presentation (PRS)- Business Concept Pitching	20
☒	Portfolio (PTO)- a. Critical Appraisal of Concepts/ Theories of Entrepreneurship based on real entrepreneurial ventures (20%) b. Industry-based Analysis of real entrepreneurial ventures (20%) c. Business Plan (20%)	60
☐	Multiple Choice Exam (MCQ)	

☒	Assignment (ASM)– Case Study Analysis	20
☐	Design Project (DPR)	
☐	Debate (DEB)	

D. Indicative Student Workload:	Indicative hours
Class Contact: Lectures	12
Class Contact: Small Group Discussions or online	12
Class Contact: Workshops	40
Specified learning activities- Seminar (for pitching presentation)	12
Blended learning activities	20
Autonomous student learning	12
Group-based learning	12
Total hours	120 hours

E. Indicative Content		
Topic	Content	Content Sources/Resources (e.g. texts, web resources, journal articles, equipment resources)
Ice-breaking	Overview, Requirements, Policy, VLE explanation and team-building exercise	
Development of Entrepreneurial Mindset based on Entrepreneurship concepts, theories and practices.	Models, concepts, theories and practices of Entrepreneurship at Individual, Business and Global Environment, Global Entrepreneurship Monitor (GEM)	Kuratko, D. (2019) Entrepreneurship: Theory, Process and Practice, Cengage Learning. ISBN-13: ISBN 9780170411752 Matthews, C.H. and Brueggemann, R. (2015). *Innovation and Entrepreneurship: A Competency Framework.* Routledge: UK. ISBN-13: 978-0-415-74252-8 (Hardback) Wolcott, R.C., Lippitz, M.J., Gagnepain, J. (2019). *Grow from Within: Mastering Corporate Entrepreneurship and Innovation.* Mc Graw-Hill Education: New York. Corrales-Estrada, M. (2019). *Innovation and Entrepreneurship: A New Mindset for Emerging Markets.* Emerald Publishing

		Limited: UK. ISBN-13: 9781789737028 Carayannis, E.G.; Samara, E.T. Bakouros, Y.L. (2015). *Innovation and Entrepreneurship: Theory, Policy and Practice.* Springer. ISBN-13: 978-3-319-11241-1 Morris, M.H., Kuratko, D.F., Covin, J.F. (2010) *Corporate Entrepreneurship & Innovation.* Cengage. ISBN-13: 978-0538478922 Mazzarol, T. and Reboud, S. (2020). *Entrepreneurship and Innovation: Workbook.* Tilde Publishing and Distribution: Australia. ISBN-13: 978-0734612274 Lorenzo, O., Kawalek, P., Wharton, L. (2018). *Entrepreneurship, Innovation and Technology: A Guide to Core Models and Tools.* Routledge: UK. ISBN-13: 9781138497610 Meyers, M. & Hodel, K.P. (2017). Beyond Collision: *How to Build Entrepreneurial Infrastructure*, California: Wavesource LLC. ISBN-13: 978-0692999899.

Course Title:	Consumer Behaviour			
Course Code:	FOODI Elective 6			
Course Type:	Core ☐ Elective ☒			
Course Coordinator:	Dr. Serey Mardy (SRU)			
Credits:	6 ECTS	Level:	9	Semester: 2

A. Course Description
This course will help students to understand the consumer behavioural patterns of food demand. The course focuses on practical theories, exploring the many factors that influence why consumers buy particular food products and how these impact purchase behaviour. The students will learn about the food industry, food services, food operations, food production, the nature of food demand and the factors that influence food choice. The course will be taught using lectures, case study, group work, project team work, and a social survey on the customer behaviour relating to food choice and purchasing.

B. Course Learning Outcomes. On completion the student will be able to:	
1.	Understand, in overview, the food industry and responsiveness of buyers
2.	Determine the factors impacting consumer food preference and purchase behaviour
3.	Conduct a survey on consumer food choice and purchase behaviour to experience the reality of consumer behaviour
4.	Display competence in food production, food service and food demand dynamics
5.	Facilitate food producers to meet the needs of the consumer
Transferable Skills: Advance Knowledge, Communication, Team Working, Research, Managerial and Entrepreneurship skills	

C. Assessment Strategies:		
	Assessment Type	Percentage of Final Marks
☒	Final Exam (FEX)	40
☒	Presentation (PRS)	10
☒	Case Analysis and Discussions (CAD)	10
☐	Multiple Choice Exam (MCQ)	-
☒	Assignment (ASM)	15
☒	Design Project (DPR)	20
☒	Attendance	5

D. Indicative Student Workload:	Indicative hours
Class Contact: Lectures	30
Class Contact: Small Group Discussions or online	-
Class Contact: Workshops	10

Specified learning activities	15
Blended learning activities	10
Autonomous student learning	15
Group-based learning	20
Social Survey	20
…	
Total hours	120

E. Indicative Content		
Topic	Content	Content Sources/Resources (e.g. texts, web resources, journal articles, equipment resources)
1. Introduction to the world food industry	1. An overview of the world food industry 2. Responsiveness of buyers 3. Good meal	Gaia, B. P. R. (2015). *The food industry: history, evolution and current trends*. Department of Business and Economics,
2. Food services and food operations	1. The determining of food choice 2. Menu planning 3. Nutritional awareness 4. Hotel terminology at work 5. Developing teams in food service 6. Production excellence	William, M. K. A. (2013). Behavioural patterns in the food industry: Consumer behaviour at food joints in Sunyani Metropolis. Atlantic International University.
3. Factor influencing the food choice and purchase	2. The driver of choice 3. Customer behavioural patterns 4. Decision making 5. Purchase decision 6. Cultural and social influences 7. Religion, cults and scares	Jesionkowska,, K., Sijtsema, S., Simoneaux,, R., Konopacka,, D. & Plocharski, , W. (2008). Preferences and consumption of dried fruit and dried fruit products among Dutch, French and Polish consumers. Journal of Fruit and Ornamental Plant Research, 16, 261-274. Lewicki,, P. P. (2006). Design of hot air drying for better foods. Trends in Food Science & Technology, 17, 153-163. Sijtsema, S. J., Jesionkowska, , K., Simoneaux, R., Konopacka,, D. & Snoek,, H. (2012). Perceptions of the health and convenience characteristics of fresh and dried fruits. LWT-Food Science and Technology, 49, 275-281.

4. Food production	8. Food demand 9. Food supply 10. Food value chain 11. Food serving 12. Food market 13. Food research and concept development	Campbell, I.D., Durant D.G., Hunter, K.L. and Hyatt, K.D. (2014): Food Production; in Canada in a Changing Climate: Sector Perspectives on Impacts and Adaptation, (ed.) F.J. Warren and D.S. Lemmen; Government of Canada, Ottawa, p. 99-134 FAO (2014). Economic analysis of supply and demands for food up to 2030 – special focus on fish and fishery products. Food and Agriculture Organization of the United Nations, Rome.
5. The Nature of Demand	14. Price, value and worth 15. Managing the service sequence 16. Setting the mood 17. Taking food orders 18. Billing 19. Clearing 20. Recommendation	William, M. K. A. (2013). Behavioural patterns in the food industry: Consumer behaviour at food joints in Sunyani Metropolis. Atlantic International University.