



Course Syllabus (Academic Year 2021)

School of Interdisciplinary Studies, Kanchanaburi Campus, Mahidol University

1. **Course No. and Title** : KAFT 482 Cereal and Starch Technology
Credit (study hours) : 3 (3-0-6)
2. **Program Name** : Bachelor of Science in Food Technology
3. **Course Module** : Specific Core Course, Elective Subject
Pre/co-requisite : KAFT 324 Food Chemistry II, KAFT 337 Food Processing II
4. **Class Semester** : 1st Semester Academic Year 2021
5. **Class Schedule & Venue** : Monday, 13.00-16.00, Hybrid classroom (Webex & Room XXX)
6. **Class Coordinator** : Assoc. Prof. Dr. Rungtiwa Wongsagonsup
 Contact No. : 082-470-7341 E-mail : rungtiwa.won@mahidol.ac.th

7. Course Description

Structure, components and properties of various types of cereal grains; post-harvesting management of cereal; processing of cereal grains to other products; starch biosynthesis; components and structure of starch granules; properties of native and modified starches; starch applications in food and other industries; work effectively with others

8. Course Objectives / Course Learning Outcomes (CLOs)

No.	Objectives / CLOs	Expected Skills / Knowledge			PLOs
		Specific	Generic	Knowledge	
8.1	Explain the chemistry underlying the properties of various food components in cereal grains	S5	G4	K2	1
8.2	Explain the suitable post-harvest handling and storage of cereal grains as well as the processing techniques of cereal grains, root and tuber	S2	G1, G3	K2-K3	1
8.3	Explain the chemistry underlying the properties of starch from various botanical sources and its utilization in food and non-food industries	S5	G4	K2, K16	1

8.4	Demonstrate the use of communication skill and show cooperative teams	-	G10, G14 G15-G17	K25 -	4, 5
-----	---	---	---------------------	----------	------

9. Class Instructor List

9.1 Name : Assoc. Prof. Dr. Rungtiwa Wonsagonsup (RW) Email : rungtiwa.won@mahidol.ac.th

9.2 Name : Dr. Amnat Jarerat (AJ) Email : amnat.jar@mahidol.ac.th

9.3 Name : Aj. Kittisak Wasantiwong (KW) (Invited Lecturer) Email : kittisak_was@dusit.ac.th

Suan Dusit School of Culinary Arts, Suan Dusit University, Bangkok

10. Course Outline

Week	Date	Contents	CLOs	Teaching & Learning	Instructor's Names
1	28/06/21	Structure of cereals	8.1, 8.4	Interactive lecture and assignment	RW
2	05/07/21	Chemical compositions of cereals	8.1, 8.4		RW
3	12/07/21	Post-harvest management of cereals and aging of stored rice	8.2, 8.4		KW
4	19/07/21	Rice quality and management of organic rice	8.1, 8.2, 8.4		KW
5	26/07/21	Supply chain of rice, and current situation and rice market	8.2, 8.4		KW
6	02/08/21	Cereal processing	8.2, 8.4		RW
7	09/08/21	Root and tuber processing	8.2, 8.4		RW
8	16/08/21	Starch biosynthesis	8.3, 8.4		RW
9	Mid-term Examination (23 Aug 2021)				
10	30/08/21	Starch components and structure	8.3, 8.4	Interactive lecture and assignment	RW
11	06/09/21	Starch analyses and properties I	8.3, 8.4		RW
12	13/09/21	Starch analyses and properties II	8.3, 8.4		RW
13	20/09/21	Starch modification I	8.3, 8.4		RW
14	27/09/21	Starch modification II and application of starch in food and other industries	8.3, 8.4		RW
15	04/10/21	Sweeteners and their derivatives from starch hydrolysis	8.3, 8.4		AJ
16	11/10/21	Paper presentation	8.4	Oral presentation	RW, AJ
17	Final Examination (18 Oct 2021)				

11. Course Assessment

No.	Methods / Activities	Regulations	CLOs	Week	Weight Distribution (%)
11.1	Mid-term exam	- Closed book - Calculator is not allowed	8.1, 8.2	1-7	30
11.2	Final exam	- Closed book - Calculator is not allowed	8.3	8, 10-15	30
11.3	Assignment	Group assignment	8.1, 8.2, 8.3, 8.4	1-8, 10-15	20
11.4	Paper presentation	Group assignment	8.1, 8.2, 8.3, 8.4	16	15
11.5	Class participation	Instructor evaluation of class participation	8.4	1-8, 10-16	5
				Total	100

12. Grading System

Criterion-referenced evaluation

Grade	Score	Grade	Score	Grade	Score	Grade	Score
A	≥ 80 %	B	70 – 74.99%	C	60 – 64.99%	D	50 – 54.99%
B+	75 – 79.99%	C+	65 – 69.99%	D+	55 – 59.99%	F	< 50 %

Norm-referenced evaluation

*If use both criterion and norm-referenced evaluation, please tick two boxes.

13. References

13.1 กล้าณรงค์ ศรีรอด และ เกื้อกุล ปิยะจอมขวัญ. (2543) เทคโนโลยีของแป้ง, พิมพ์ครั้งที่ 2 สำนักพิมพ์ มหาวิทยาลัยเกษตรศาสตร์, กรุงเทพฯ

13.2 อรอนงค์ นัยวิกุล. (2540) ข้าวสาลี: วิทยาศาสตร์และเทคโนโลยี, พิมพ์ครั้งที่ 2, สำนักพิมพ์มหาวิทยาลัยเกษตรศาสตร์, กรุงเทพฯ

13.3 อรอนงค์ นัยวิกุล. (2547) ข้าว: วิทยาศาสตร์และเทคโนโลยี, พิมพ์ครั้งที่ 1, สำนักพิมพ์มหาวิทยาลัยเกษตรศาสตร์, กรุงเทพฯ

13.4 Hosney, R.C. (1998) Principles of Cereal Science and Technology, 2nd ed. American Association of Cereal Chemists, Inc., Minnesota

13.5 Whistler, R.L., BeMiller, J.N. and Paschall, E.F. (1984) Starch: Chemistry and Technology, 2nd ed. Academic Press Inc., Florida