

# The Hong Kong Polytechnic University

## Subject Description Form

<b>Subject Code</b>	ABCT1D17	
<b>Subject Title</b>	<b>Functional Foods and Cosmetics</b>	
<b>Credit Value</b>	3	
<b>Level</b>	1	
<b>Pre-requisite / Co-requisite/ Exclusion</b>	Exclusion: BScFST students. Other ABCT students are allowed to take this CAR subject.	
<b>Objectives</b>	<p>(a) To introduce the scientific background and technological concepts of functional foods and cosmetic products that are formulated with natural bioactive products</p> <p>(b) To review the current trends in the development and application, and the government regulations of functional food products</p> <p>(c) To illustrate the active constituents, health benefits and measurements of functional foods.</p>	
<b>Intended Learning Outcomes</b>	<p>Upon completion of the subject, students will be able to:</p> <p>(a) Recognize the increasing importance of functional foods for healthy living (to lower the risk of diseases and improve the quality of life).</p> <p>(b) Apply the technical terms for classification and description of functional foods, and their differentiation from other food and medicinal products.</p> <p>(c) Summarize the major constituents and health benefits of functional foods and cosmetics, and the standard methods for quality evaluation.</p> <p>(d) Broaden their scientific knowledge and develop more rational judgment on selection and use of functional food products.</p> <p>(e) Improve their skills for team work, lifelong learning, and effective communication.</p>	
<b>Subject Synopsis/ Indicative Syllabus</b>	<p><b><u>Topics</u></b></p> <p>1. Introduction (functional foods in our life for wellness; product forms and properties; terms and definitions)</p> <p>2. Functional ingredients (bioactive constituents; structure and activity relationships; mechanisms of action) Bioactive lipids (fish and microalga); Plant ingredients (soy extracts, sterols, stanols, and fiber); Dairy ingredients (galacto-oligosaccharides; probiotics and prebiotics); Tea polyphenols</p> <p>3. Functional food products (processing and formulation; chemical analysis and quality standards; efficacy and safety) Solid-liquid extraction; isolation and analysis of active ingredients; thermal and non-thermal processing; various formulations (e.g. beverages, capsules, tablets, and gels).</p>	<p><b><u>Contact hrs</u></b></p> <p>4</p> <p>12</p> <p>6</p> <p>3</p>

	<p>4. Functional food Regulations Hong Kong, China, and worldwide (e.g. US, Canada, EU, Japan and Australia) 3</p> <p>5. Functional cosmetics (cosmeceuticals and nutricosmetics) Skin ageing and oxidative stress; Natural products and antioxidants (botanicals, fish oils) for skin protection against photo-aging, hydration, firming, anti-inflammatory; Beauty from within; Slim-fast products 6</p> <p>6. Health benefits (immune system, gastronomy, child nutrition, bone health, gut health, energy &amp; endurance; lower risk of diseases: cancer, obesity, diabetes and cardiovascular diseases) 3</p> <p>7. Case studies (Probiotics and microbiota; important Chinese herbs and medicinal fungi) 2</p> <p>8. Guest lecture from a functional food professional in the industry (on general and contemporary topics) 39</p> <p style="text-align: right;"><b>Total:</b></p>
<p><b>Teaching/Learning Methodology</b></p>	<p><u>Lectures</u>: This is the major teaching method used in this subject, mainly done by ppt presentation, to introduce the essential contents, to elaborate the scientific principles, technical terms and concepts. Practical examples and problems will be used to illustrate the principles. Questions will be asked to stimulate the learning and understanding.</p> <p><u>Tutorials</u>: This is to provide a more interactive and student-centered learning environment. The tutorial class will be guided by the teacher and the tutorial activities be performed by the students. Tutorial modes and activities: (1) the teacher can give further explanation of the major and difficult contents, and demonstrate examples and exercises; (2) the students can form small groups to discuss problems and do exercises.</p> <p><u>Individual essays</u> will be assigned to students on the lecture topics; All will be submitted in due time and evaluated by the teachers.</p> <p><u>Guest lecture</u> (at least one): To be given by a functional food professional in the industry on commercial functional food products and related technology, addressing a general and contemporary topic of public interests.</p> <p><u>Laboratory work</u>: To practice the formulation and preparation of simple functional foods and cosmetic products and evaluation of product quality and attributes; To view the lab facilities for development and preparation of functional foods; Demo labs for evaluation of functional foods and bioactive ingredients (e.g. total phenolics and antioxidant activity).</p> <p><u>Group project and presentation</u>: A group of 4-6 students will work on an assigned project topic to write a project report (e.g. preparation/description of some functional foods, cosmetic products or a class of bioactive ingredients), and give an oral presentation in the class. Through the group project, the students can exercise higher order thinking and creativity, and improve skills for team work, lifelong learning and effective communication as well as critical thinking. The literature studies and report writing also increase literacy.</p>

<b>Assessment Methods in Alignment with Intended Learning Outcomes</b>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)				
			a	b	c	d	e
	1. Quizzes	50%	✓	✓	✓		
	2. Assignments and Essays	20%	✓	✓	✓	✓	✓
	3. Lab work	15%			✓	✓	✓
	4. Group presentation	15%	✓	✓	✓	✓	✓
Total	100 %						
<p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>Quizzes: 40% on class materials and 10% on lab experiments.</p> <p>Assignments and essays: a group project (5%) and an individual assay (15%), to be written based on literature reviews and teaching materials. Topics will be provided by the teachers or devised by the students based on the subject contents.</p> <p>Lab work: To let students in small groups make/prepare simple functional food and cosmetic products using natural products; to learn about the major constituents and their properties, and functions.</p> <p>Group presentation: oral presentation of the group assignment/project by each group of students;; to let the students build up skills of team work and communication.</p>							
<b>Student Study Effort Expected</b>	Class contact:						
	▪ Lectures		26 Hrs.				
	▪ Tutorials		13 Hrs.				
	Other student study effort:						
	▪ Literature review report and poster presentation		25 Hrs.				
	▪ Self-study		40-70 Hrs.				
	Total student study effort		109-134 Hrs.				
<b>Reading List and References</b>	<p>1. Dietary supplements and functional foods by Webb GP [PolyU Lib e-book], Wiley-Blackwell, 2011 2nd ed.</p> <p>2. Functional food and health. Washington, D.C. : American Chemical Society ; New York : Distributed by Oxford University Press, 2008.</p> <p>3. Cosmetic formulation of skin care products [electronic resource] edited by Z. D. Draelos, L. A. Thaman. New York, NY: Marcel Dekker, 2006.</p> <p>4. Handbook of Cosmetic Science and Technology, Fourth Edition André O. Barel, Marc Paye and Howard I. Maibach CRC Press 2014.</p>						