Course	Environmental Health Perspective
Course No.	0AVC002
Credits	2 Credits
Grade	1 Year
Timetable	Fall AB Fri 2, 3
Instructor	Yoshiro Kumagai, Yasuhiro Shinkai, Ryosuke Ohniwa, Norihiko Obayashi, Lombardo Fabien Claude Renaud, Zheng Ling
Course Overview	We are exposed to a variety of environmental stresses on a daily basis through living environments, lifestyles, and dietary habits. For example, while we take the nutrients necessary for life support through our diet, overload and deficiency of the nutrients impair health. It is also little doubt that chemicals contaminated in water and foods affect human health, resulting in occurrence of a variety of diseases. In this lecture, first of all, the students will learn 1) fundamental biochemistry (e.g., metabolism and synthesis) of the five major nutrients (carbohydrates, lipids, proteins, vitamins, and minerals) in the body, 2) role of such nutrients in the body development/maintenance and aging, 3) onset of various diseases caused by excessive and deficient the nutrients, and 4) intake of the nutrients from food. Next, we will learn the health hazards caused by environmental pollutants contaminated in water and food.
Remarks	Conducted in English. Required for students of International Joint Degree Master's Program in Agro-Biomedical Science in Food and Health.
Course Type	Lectures
Link between Course Objectives and Activities	The students will acquire specialized basic skills related to health and food resources, and the utility of substances to the living body through the study of the functions of the five major nutrients in the body.
Academic Goal	The students will be able to explain the five major nutrients and their molecular functions. The students will be able to explain the relationship between the five major nutrients and development/maintenance of the body. The students will be able to explain the five major nutrients and diseases. The students will be able to explain the supply and source of the five major nutrients. The students will be able to explain the relationship between exposure to a variety of environmental pollutants and health through dietary habits.
Course Schedule	(1) Five nutrients and mind and body (Ohniwa) (2) Metabolism of carbohydrates (Ohbayashi) (3) Metabolism of lipids (Ohbayashi) (4) Metabolism of amino acids (Ohbayashi) (5) Mineral and essential trace elements (Shinkai) (6) Vitamins (Ohniwa) (7) Crosstalk of the five nutrients (Ohniwa) (8) Nutrient supplementation (Lombardo) (9) Nutrients and diseases (Zheng) (10) Environmental pollutants and health (Kumagai)
Course Prerequisites and Advisories	
Grading Philosophy (Percentage/ Criteria/ Methodology)	The students are evaluated by positive questions and statements (30%), and report (70%) . Grading Criteria is A+ (Superior), A (Excellent), B (Good), C (Average), and D (Failure).
Self-Directed Learning Other Than Coursework	For better understanding of the lectures, the students will understand the meaning of the technical terms, and read the references described in the materials distributed at the first introduction.
Textbooks, References and Supplementary Materials	The materials related to the lecture will be distributed during the first class.
Office Hours	Name: Yoshito Kumagai E-mail: yk-em-tu@md.tsukuba.ac.jp By appointment only

Other (i.e. Expectations on Classroom, Conduct and Decorum etc.)	Nothing in particular.
Related Courses	Basic Toxicology, Contemporary Issues in Global Health
Keywords	Five major nutrients, molecular functions, and physical functions, environmental pollutants, health damage