Course	Environmental Health Perspective
Course No.	01ER102
Credits	2 Credits
Grade	1st Year
Timetable	Fall AB Fri 2, 3
Instructor	Yoshiro Kumagai, Yasuhiro Shinkai, Masahiro Akiyama, Yumi Abiko, Shoji Nakayama
Course Overview	There are numerous chemical substances in the environment, resulting in some serious effects on the body. However, current molecular studies suggest that illnesses caused by exposure to environmental chemicals are, at least in part, attributable to the interaction with macromolecules like proteins in the organism. This lecture offers an opportunity to learn about a variety of symptoms caused by exposure of humans to environmental chemical and initial response and cellular protection against such chemicals.
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	Upon completion of this course, students will be able to examine current environmental medicine issues through various disciplines.
Academic Goal	To nurture the foundation of medical science to understand food and health issues, this course aims to equip students with an understanding of chemical characteristics of environmental chemicals, roles of xenobiotic enzymes in the detoxification and metabolic activation associated with toxicity, and systems of initial response and cellular protection against such chemicals. In addition, in terms of public health aspects, students will develop an understanding of environmental risks and exposome.
Course Schedule	1. Introduction (Yoshito Kumagai) 2. Chemical characteristics of environmental chemicals (Yoshito Kumagai) 3. Detoxification and metabolic activation of environmental chemicals-1 (Yasuhiro Shinkai) 4. Detoxification and metabolic activation of environmental chemicals-2 (Yasuhiro Shinkai) 5. Initial response and cellular protection against environmental chemicals-1 (Masahiro Akiyama) 6. Initial response and cellular protection against environmental chemicals-2 (Masahiro Akiyama) 7. Environmental carcinogens (Yumi Abiko) 8. Genetic polymorphism (Yumi Abiko) 9. Exposome-1 (Shoji Nakayama) 10. Exposome-2 (Shoji Nakayama)
Course Prerequisites and Advisories	
Grading Philosophy (Percentage/ Criteria/ Methodology)	Students are evaluated by their class participation (40%), presentation (30%) and test (30%). Grading Criteria is A+ (Superior), A (Excellent), B (Good), C (Average), and D (Failure). Grade C is for students who are able to understand the basics of molecular medicine and public health on environmental medicine. Grade B is for students who are able to clearly understand the significance of environmental medicine on food health science as well as who satisfy the criteria of Grade C. In addition, if students are considered to be able to have their own perspective on environmental medicine by actively participating in questions and answers during the class, they can get grade A. Students who are extremely brilliant by accomplishing their goal comprehensively will get Grade A+.
Self-Directed Learning Other Than Coursework	Read textbooks and activate discussion out of classes.
Textbooks, References and Supplementary Materials	Human Biology: Fifth Edition, Jones & Bartlett Pub. Drug Metabolizing Enzymes: Cytochrome P450 and Other Enzymes in Drug Discovery and Development, Marcel Dekker Inc. Environmental Toxicants: Human Exposure and Their Health Effects, John Wiley & Sons., Inc.

	Oxidative Stress in Vertebrates and Invertebrates, Wiley-Backwell
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.)	
Related Courses	Basic Toxicology, Contemporary Issues in Global Health
Keywords	Agro-Biomedicine, Health Security, Environmental Chemicals, Exposome