



Tokyo University of Agriculture  
and Technology  
Faculty of Agriculture



Course of Advanced Environmental Agriculture  
and Food Technology

The Faculty of Agriculture consists of five departments aimed at contributing to the creation of a sustainable society. We strive to nurture talents with skills and practical capabilities to help address global challenges in the fields of agriculture, life science, environmental science and veterinary medicine.

The Faculty offers a half-year course with the aim of providing education programs on advanced agricultural science and engineering concerning sustainable food productions, natural resources management, and environmentally harmonized technology.

No.	Subject Titles	Subject Titles
1	Introduction to Food and Agricultural Science	8 Irrigation and Drainage Engineering
2	Principles and Potentials of Agribusiness	9 Principles of Soil and Water Engineering
3	Food Science	10 The Study on International Development on Rural Areas
4	Structures and Environment for Bio-Productions	11 Sustainable Agriculture: Concept, Theory and Practices
5	Environmental Plant Ecology	12 Experiment Course on Food Production and Agro-Environment
6	Food Safety and Zoonosis	13 Student Research in a Specific Field
7	Soil Science and Plant Nutrition	

Advanced Environmental Agriculture and Food Technology Course No.1  
 (Faculty of Agriculture, Tokyo University of Agriculture and Technology)

Course Name	Introduction to Food and Agricultural Science
Instructor Name	Taiichiro OOKAWA and other faculty staff
Office Hours and Contact Information	Office hours – encourage appointments by email. Location: The 6 <sup>th</sup> Bldg. 6-206, phone 5672, ookawa@cc.tuat.ac.jp
Course Number	
Course Structure	Lectures
Term, Meeting Days, Time and Location	
Course Credits	2
Course Overview	This lecture is intended to provide an introduction to food and agricultural science. It begins with the importance of agriculture in a human society. We study food production and agricultural science covering from plant and animal sciences for food and agricultural production, to the improvements of crops and animals, and to the environments for agricultural production.
Course Key Words	Food production, Agricultural science, Plant, Animal, Environment
Academic Goal	
Course Schedule	<p>week1: How we feed the ten billion? -Importance of food and agricultural science-</p> <p>week2: Plants for food and agricultural production 1. Crops for food, feed and bioenergy</p> <p>week3: Plants for food and agricultural production 2. Horticultural crops</p> <p>week4: Plant Science for agricultural production 1. Plant Anatomy, Ecology and Physiology</p> <p>week5: Plant Science for agricultural production 2. Reproduction, Genetics and Breeding</p> <p>week6: Animals for food and agricultural production</p> <p>week7: Animal Science for agricultural production -Animal Anatomy, Physiology, Nutrition, Reproduction and Breeding</p> <p>week8: Environment for agricultural production 1. Soils</p> <p>week9: Environment for agricultural production 2. Agroecosystems</p> <p>week10: Environment for agricultural production 3. Cropping systems and Sustainable agriculture</p> <p>week11: Field tour -University farm</p> <p>week12: Field tour -Farmer's field</p>
Textbooks, References, and Supplementary Materials	"Introduction to Agronomy -Food, Crops, and environment" by C.C. Sheaffer and K.M. Moncada. Other text books and supplementary materials are introduced in the lecture.
Other (i.e. Expectations on Classroom Conduct and Decorum etc.)	

Advanced Environmental Agriculture and Food Technology Course No.2  
 (Faculty of Agriculture, Tokyo University of Agriculture and Technology)

Course Name	Principles and Potentials of Agribusiness
Instructor Name	Atsushi CHITOSE and other faculty staff
Office Hours and Contact Information	Office hours- On the appointment basis. Please contact me by e-mail. Location: Bldg. #2 206, phone 5687, chitose@cc.tuat.ac.jp
Course Number	
Course Structure	Lecture
Term, Meeting Days, Time and Location	
Course Credits	2
Course Overview	This course discusses the broad spectrum of agribusiness, with an emphasis on markets and technologies. The course consists of two sections. The first section provides the fundamentals of production, marketing and distribution throughout the food supply chain (food system). This section includes such topics as food safety, risk analysis of food and organic farming. The second section explores various emerging technologies that might innovate food and agricultural systems, leading to new agribusiness in the future.
Course Key Words	Food supply chain, Market, Food safety, Risk, Technology, Innovation
Academic Goal	To understand the fundamentals of agribusiness and emerging technologies that would innovate food and agricultural systems.
Course Schedule	week1: Overview of agriculture and agribusiness, Food supply chain week2: Basic economics: scale economies and scope economies week3: Agricultural markets, Types of agribusiness 1): by markets week4: Types of agribusiness 2): by agents or other indicators week5: Behavior of agribusiness agents: private firms vs. cooperatives week6: Food safety and risk analysis week7: Food quality and certification week8: Organic farming week9: Emerging technology for agribusiness 1): Global G.A.P week10: Emerging technology for agribusiness 2): AI, ISO week11: Emerging technology for agribusiness 3): Pioneers/Innovators week12: Emerging technology for agribusiness 4): Intellectual property
Textbooks, References, and Supplementary Materials	Some materials will be distributed in class while references will be announced.
Other (i.e. Expectations on Classroom Conduct and Decorum etc.)	Understanding basic microeconomics is preferred, but not required.

Advanced Environmental Agriculture and Food Technology Course No.3  
 (Faculty of Agriculture, Tokyo University of Agriculture and Technology)

Course Name	Food Science
Instructor Name	Prof. Yutaka Miura, Prof. Makoto Hattori, Assoc Prof. Tadashi Yoshida
Office Hours and Contact Information	Office hours- encourage appointments by e-mail. e-mail: <a href="mailto:eiyouym@cc.tuat.ac.jp">eiyouym@cc.tuat.ac.jp</a> (YM), <a href="mailto:makoto@cc.tuat.ac.jp">makoto@cc.tuat.ac.jp</a> (MH), <a href="mailto:tyoshi@cc.tuat.ac.jp">tyoshi@cc.tuat.ac.jp</a> (TY)
Course Number	
Course Structure	Lectures
Term, Meeting Days, Time and Location	TBA
Course Credits	2
Course Overview	This lecture focuses on food chemistry, food functions, food nutrition, and food safety. The chemical properties of food components are lectured in food chemistry parts. The physiological functions of foods and metabolism of food components are also introduced. You can also learn about food safety techniques in this lecture.
Course Key Words	Food components, functional foods, nutrition, food safety
Academic Goal	Aim to provide basic knowledge of chemical and physiological properties of foods.
Course Schedule	<ol style="list-style-type: none"> <li>1. Introduction for this lecture</li> <li>2. Food chemistry 1 (basics for food components)</li> <li>3. Food Chemistry 2 (carbohydrates in foods)</li> <li>4. Food Chemistry 3 (proteins in foods)</li> <li>5. Food Chemistry 4 (lipids in foods)</li> <li>6. Food Chemistry (minerals and vitamins in foods)</li> <li>7 Food Chemistry (reactions among food components)</li> <li>8. Discussion</li> <li>9. Food Functions 1 (nutritional aspects of foods)</li> <li>10. Food Functions 2 (metabolism of food components)</li> <li>11. Food Functions 3 (foods and diseases)</li> <li>12. Discussion</li> <li>13. Food safety (hygiene during food processing)</li> <li>14. Discussion</li> <li>15. Examination</li> </ol>
Textbooks, References, and Supplementary Materials	To be announced in the lecture.
Grading Philosophy (Percentage / Criteria / Methodology)	Attendance (10%), reports (40%) and exam (50%)
Other (i.e. Expectations on Classroom Conduct and Decorum etc.)	Lecture attendance will be recorded.

Advanced Environmental Agriculture and Food Technology Course No.4  
 (Faculty of Agriculture, Tokyo University of Agriculture and Technology)

Course Name	Structures and Environment for Bio-Productions
Instructor Name	Seishu Tojo, Tadashi Chosa
Office Hours and Contact Information	tojo@cc.tuat.ac.jp, chosa@cc.tuat.ac.jp
Course Number	
Course Structure	Lecture and excursion
Term, Meeting Days, Time and Location	
Course Credits	2
Course Overview	Agricultural structures such as greenhouse, plant nursery, grain store, etc. are needed for stable productions in various climate conditions. Environmental control technologies, measuring instruments, machines, information technologies applied to horticultural structures are explained with progressive case studies. Postharvest technologies, heat transfer and image processing are explained with current problems and challenges in several advanced cases.
Course Key Words	greenhouse, information & communication technology, postharvest technology
Academic Goal	To understand structures, environmental control technologies and postharvest technologies for bio-production for value-added agriculture.
Course Schedule	<p>I. Productions in horticultural structures and plant factory (T. Chosa)</p> <ol style="list-style-type: none"> <li>1) Outlines of horticultural production and plant factory</li> <li>2) Control technologies for horticultural production (i) Temperature and humidity</li> <li>3) Control technologies for horticultural production (ii) Light and others</li> <li>4) Automation with mechanization and robotization</li> <li>5) Utilization of information and communication technologies</li> <li>6) Evaluation of horticultural structures as working environment</li> <li>7) Case studies on horticultural structure and environment</li> </ol> <p>II. Postharvest technologies and facilities (S. Tojo)</p> <ol style="list-style-type: none"> <li>8) Outlines of postharvest technologies and facilities</li> <li>9) Theory and technologies of heat utilization</li> <li>10) Precooling facilities and cold chain for vegetables</li> <li>11) Drying and storing facilities for cereal grains</li> <li>12) Image processing technologies</li> <li>13) Selecting and packaging facilities</li> <li>14) Bioenergy plant</li> </ol> <p>Examination</p>
Textbooks, References, and Supplementary Materials	Principles of process engineering (Henderson, Perry, Young), ASAE
Grading Philosophy (Percentage / Criteria / Methodology)	Attendance (50%), examination and report (50%)
Other (i.e. Expectations on Classroom Conduct and Decorum etc.)	

Advanced Environmental Agriculture and Food Technology Course No.5  
(Faculty of Agriculture, Tokyo University of Agriculture and Technology)

Course Name	Environmental Plant Ecology
Instructor Name	Yoshiharu FUJII, Shin OKAZAKI
Office Hours and Contact Information	Office hours: available upon request Yoshiharu FUJII < yfujii@cc.tuat.ac.jp >, Shin OKAZAKI <sokazaki@cc.tuat.ac.jp>
Course Number	
Course Structure	Lectures
Term, Meeting Days, Time and Location	TBA
Course Credits	2
Course Overview	Plant Ecology related to environment and agriculture will be discussed. How and why species adapted to the environment and made diverse existence (Biodiversity) will be discussed. The current status of risk assessment and management of invasive alien plants will also be covered. Plant to plant interaction, plant to soil microorganism interaction based on metabolites and genomics will be discussed.
Course Key Words	Adaptogenesis, biodiversity, biological interactions, allelopathy, soil microorganism, vegetation survey, alien species, weed, life form
Academic Goal	Obtain basic knowledge of Environmental Plant Ecology in paddy field
Course Schedule	<ol style="list-style-type: none"> <li>1. Introduction: History, concept, methodology</li> <li>2. Shape and life form of plants (rosette, creeping, halophyte etc.)</li> <li>3. Plant community, analysis of plant community, basic statistics</li> <li>4. Succession, primary and secondary</li> <li>5. Habitat, phytoclimatology</li> <li>6. Vegetation zone in Japan and world, Phytogeography</li> <li>7. Biodiversity and its crisis, utilization of biodiversity</li> <li>8. Mid-term examination</li> <li>9. Chemical ecology and allelopathy</li> <li>10. Interaction between plant and microorganism</li> <li>11. Ecological evolution, adaptation and evolution</li> <li>12. Weed biology, weed in agriculture, weed in environment</li> <li>13. Invasive alien plants, risk assessment, management</li> <li>14. Plant environmental ecology and agriculture in the region</li> <li>15. Examination</li> </ol>
Textbooks, References, and Supplementary Materials	<ol style="list-style-type: none"> <li>1) Plant Ecology, Second Edition, Michael J. Crawley ed. (2009)</li> <li>2) Campbell Biology, Tenth Edition, Jane B. Reece, Lisa A. Urry, Michael L. Cain, Steven A. Wasserman, Peter V. Minorsky, Robert B. Jackson (2014) (Ninth Edition (2011) will do)</li> <li>3) Allelopathy, New concepts and methodology, Yoshiharu Fujii and Syuntaro Hiradate ed (2007)</li> </ol>
Grading Philosophy (Percentage / Criteria / Methodology)	Participation in lectures and assignments (40%), Midterm exam (30%) and Final exam (30%)
Other (i.e. Expectations on Classroom Conduct and Decorum etc.)	

Advanced Environmental Agriculture and Food Technology Course No.6  
 (Faculty of Agriculture, Tokyo University of Agriculture and Technology)

Course Name	Food Safety and Zoonoses
Instructor Name	Hideki HAYASHIDANI, Tetsuya FURUYA, Makoto NAGAI
Office Hours and Contact Information	Hideki HAYASHIDANI Location: 4-329A Phone Number(Ext.):5775 E-mail:eisei@cc.tuat.ac.jp
Course Number	
Course Structure	Lectures and Practice
Term, Meeting Days, Time and Location	
Course Credits	2
Course Overview	Food safety become the most important issue not only in developed countries and but also developing countries. Recently zoonoses have been increasing all over the world. In this course food safety, especially foodborne illness caused by microbiology and zoonoses will be introduced. Moreover students will learn about handling of pathogenic microbiology.
Course Key Words	Food safety, Zoonoses, Pathogen
Academic Goal	Students will acquire and in-depth understanding of about food safety and zoonoses
Course Schedule	Course content week1:Orientation, Lecture about food safety week2:Lecture about food safety week3:Lecture about food safety week4:Lecture about food safety week5:Lecture about food safety week6:Lecture about food safety week7:Lecture about food safety week8: Lecture about zoonoses week9: Lecture about zoonoses week10: Lecture about zoonoses week11: Lecture about zoonoses week12: Lecture about zoonoses week13: Practice about handling of pathogen week14:Practice about handling of pathogen week15:Examination
Textbooks, References, and Supplementary Materials	Lectures will prepare text by themselves
Grading Philosophy (Percentage / Criteria / Methodology)	Examination (60%) and attendance (40%).
Other (i.e. Expectations on Classroom Conduct and Decorum etc.)	

Advanced Environmental Agriculture and Food Technology Course No.7  
 (Faculty of Agriculture, Tokyo University of Agriculture and Technology)

Course Name	Soil Science and Plant Nutrition
Instructor Name	KIMURA Sonoko Dorothea ,TAKANA Haruo, YOKOYAMA Tadashi, OHTSU Naoko
Office Hours and Contact Information	Any time after contacting. <a href="mailto:skimura@cc.tuat.ac.jp">skimura@cc.tuat.ac.jp</a>
Course Number	TBD
Course Structure	Lectures
Term, Meeting Days, Time and Location	TBA
Course Credits	2
Course Overview	To achieve sustainable crop production, proper fertilizer application and soil management is necessary. In this lecture, basic knowledge of soil science and plant nutrition will be offered especially from the aspect of soil quality. Soil quality of tropical area will be discussed and nutrient cycling in the tropical area will be introduced.
Course Key Words	Soil quality, nutrient cycling, sustainable production
Academic Goal	The goal is to understand the basic function of soil and the relation of soil to the plant. Basic knowledge on soil management problems in the tropics should be obtained.
Course Schedule	1: Introduction (Prof. Kimura) 2: Soils, their formation, properties and composition (Prof. Tanaka) 3: Soil classification (Prof. Tanaka) 4: Soil quality (Prof. Tanaka) 5: Global situation of fertilizer use (Prof. Yokoyama) 6: Sustainable use of chemical fertilizers (Prof. Yokoyama) 7: Use of organic fertilizer and bio fertilizer (Prof. Yokoyama) 8: Uptake and transport of mineral nutrients in Plants (Prof. Ohtsu) 9. Functions of macronutrients (Prof. Ohtsu) 10 Functions of micronutrients (Prof. Ohtsu) 11: Nutrient cycling in paddy soils (Prof. Kimura) 12: Nutrient cycling in the tropical soils (Prof. Kimura) 13: Sustainable soil management methods (Prof. Kimura) 14: Challenge of organic farming (Prof. Kimura) 15: Test
Textbooks, References, and Supplementary Materials	Soil Science Simplified, Eash et al. 2008, Wiley-Blackwell Cornell Soil Health Assessment Training Manual 2nd Edition (2009) <a href="http://soilhealth.cals.cornell.edu/extension/manual.htm">http://soilhealth.cals.cornell.edu/extension/manual.htm</a> Others will be provided at the lectures.
Grading Philosophy (Percentage / Criteria / Methodology)	Attendance (40%), Short test after lecture (30%), Final Exam and report (30%)
Other (i.e. Expectations on Classroom Conduct and Decorum etc.)	



Advanced Environmental Agriculture and Food Technology Course No.8  
 (Faculty of Agriculture, Tokyo University of Agriculture and Technology)

Course Name	Irrigation and Drainage Engineering
Instructor Name	Tasuku Kato and Hirozumi Watanabe
Office Hours and Contact Information	Office hours: available upon request Tasuku Kato < taskkato@cc.tuat.ac.jp >, Hirozumi Watanabe <pochi@cc.tuat.ac.jp>
Course Number	
Course Structure	Lectures
Term, Meeting Days, Time and Location	TBA
Course Credits	2
Course Overview	Rice production has an important role for sustainable development and food security in ASEAN countries. In this course, design and function of irrigation and drainage systems in paddy fields are explained, before covering the environmental aspects regarding paddy field drainage.
Course Key Words	Paddy field, irrigation, drainage, water quality
Academic Goal	Obtain basic knowledge of the irrigation and drainage system in paddy field
Course Schedule	<ol style="list-style-type: none"> <li>1 Class orientation/ Introduction: Rice production and paddy field in the world</li> <li>2 Design and functions of paddy field --- an overview ---</li> <li>3 Field trip to FM Honmachi rice paddy field</li> <li>4 Irrigation system in rice paddy</li> <li>5 Percolation and seepage in paddy field</li> <li>6 Drainage system in rice paddy</li> <li>7 Irrigation and drainage in multi-purpose paddy fields</li> <li>8 Construction of irrigation and drainage system in rice paddy</li> <li>9 Mid term examination</li> <li>10 Environmental aspects of paddy drainage –Nutrients</li> <li>11 Ecosystem service and multi-function in paddy fields</li> <li>12 Environmental aspects of paddy drainage –pesticides</li> <li>13 Water management and pesticide discharge</li> <li>14 Global issues in Irrigation and drainage</li> <li>15 Final examination</li> </ol>
Textbooks, References, and Supplementary Materials	Advanced paddy field engineering.(1999) Miztani M.: Hasegawa S., Koga K., Goto A., Murty V.V.N.(eds) JSIDRE,
Grading Philosophy (Percentage / Criteria / Methodology)	Participation in lectures and homework assignment (40%), Midterm exam (30%) and Final exam (30%)
Other (i.e. Expectations on Classroom Conduct and Decorum etc.)	Students are expected to take lectures of “Principle of soil and water engineering” and ”Soil science and plant nutrition”

Advanced Environmental Agriculture and Food Technology Course No.9  
 (Faculty of Agriculture, Tokyo University of Agriculture and Technology)

Course Name	Principles of Soil and Water Engineering
Instructor Name	Yuji Kohgo and Hirotaka Saito
Office Hours and Contact Information	Office hours: available upon request Email: kohgo or hiros (please add @cc.tuat.ac.jp)
Course Number	
Course Structure	Lectures
Term, Meeting Days, Time and Location	TBA
Course Credits	2
Course Overview	This class covers basic topics related to physical and mechanical processes of soils for agricultural applications. Students will learn common terminology used in the field of Soil Physics and Soil Mechanics. Emphases are on movement of water through soils and mechanical behavior of soils.
Course Key Words	Soil, Flow and Transport, Geotechnical Engineering, Porous Media
Academic Goal	To provide students with basic knowledge of engineering practices for soil and water management, irrigation/drainage management and soil structure design.
Course Schedule	<ol style="list-style-type: none"> <li>1. Soil formation</li> <li>2. Soil classification</li> <li>3. Water retention in soils</li> <li>4. Water flow in soils: Saturated soils</li> <li>5. Water flow in soils: Unsaturated soils</li> <li>6. 2D flow: flow net</li> <li>7. Irrigation management in soil</li> <li>8. Stress, strain, suction, effective stress</li> <li>9. Mohr's circle, principal stresses</li> <li>10. Soil tests</li> <li>11. Shear strength</li> <li>12. Consolidation</li> <li>13. Earth pressures</li> <li>14. Slope stability</li> <li>15. Final Examination</li> </ol>
Textbooks, References, and Supplementary Materials	Notes will be provided in lectures. Recommended textbooks: <ol style="list-style-type: none"> <li>1. Soil Physics, W.A. Jury and R. Horton, Wiley</li> <li>2. The Mechanics of Soil: Introduction to critical state soil mechanics, J.H. Atkinson and P.L. Bransby, McGraw-Hill</li> </ol>
Grading Philosophy (Percentage / Criteria / Methodology)	Homework 30 % Midterm exam 30% Final exam 40%
Other (i.e. Expectations on Classroom Conduct and Decorum etc.)	Highly recommended to take "Irrigation & Drainage Engineering" prior to take this course.

Advanced Environmental Agriculture and Food Technology Course No.10  
 (Faculty of Agriculture, Tokyo University of Agriculture and Technology)

Course Name	The Study on International Development on Rural Areas
Instructor Name	TAKEUCHI Ikuo and NIE Haisong
Office Hours and Contact Information	Office hours: available upon request TAKEUCHI Ikuo < itla @cc.tuat.ac.jp >, HIE Haisong <nie-hs@cc.tuat.ac.jp>
Course Number	
Course Structure	Lectures
Term, Meeting Days, Time and Location	TBA
Course Credits	2
Course Overview	The lecture is composed of 2 parts: 1. to focus on general features on developing economies, particularly on agriculture & rural development from the viewpoint of development economics; and 2. to discuss some important problems about population issues, particularly those in China.
Course Key Words	Income increase, Industrialization strategy, Green revolution, Environment and Development, Co-op Activities; Population explosion, Environmental destruction, Population control, Population migration, Aging, etc.
Academic Goal	To obtain a basic understanding of International development issues, including Sustainable economic and social development and Community planning with a focus on economic and population issues.
Course Schedule	<ol style="list-style-type: none"> <li>1. Introduction of Methodology</li> <li>2. General Features on Developing Economies</li> <li>3. Industrialization Strategy</li> <li>4. Green Revolution</li> <li>5. Global Environmental Problems</li> <li>6. Sustainability of Agricultural Development Projects</li> <li>7. Role of Co-operative Activities</li> <li>8. Global population picture</li> <li>9. Population explosion in relation to the environment and food production</li> <li>10. Purpose of population control and family planning in developing countries</li> <li>11. Challenges for developing countries: child labor, human trafficking and gender issues</li> <li>12. Population migration: domestic and international</li> <li>13. Aging in the 21<sup>st</sup> century: challenges and opportunities</li> <li>14. Discussion</li> <li>15: Final Exam</li> </ol>
Textbooks, References, and Supplementary Materials	Handouts will be distributed as needed
Grading Philosophy (Percentage / Criteria / Methodology)	Participation in the class and homework assignment (40%), Midterm exam (30%) and Final exam (30%)
Other (i.e. Expectations on Classroom Conduct and Decorum etc.)	Students are expected to contribute in every class. Be prepared to share your opinion and/or perspective about your home country in relation to the topics covered in class.

Advanced Environmental Agriculture and Food Technology Course No.11  
 (Faculty of Agriculture, Tokyo University of Agriculture and Technology)

Course Name	Sustainable Agriculture: Concept, Theory and Practices
Instructor Name	Masaaki YAMADA and Yosei OIKAKA
Office Hours and Contact Information	8:00 – 22:00 at 2N-504 or 2N-403 (but instructors are often out.) E-mails: <a href="mailto:masaakiy@cc.tuat.ac.jp">masaakiy@cc.tuat.ac.jp</a> and <a href="mailto:yosei@cc.tuat.ac.jp">yosei@cc.tuat.ac.jp</a>
Course Number	
Course Structure	Lectures (in a seminar style with an optional self-financed excursion)
Term, Meeting Days, Time and Location	TBA
Course Credits	2
Course Overview	This course provides basic concepts, theories, and backgrounds to sustainable agriculture (SA) with a special focus on agroforestry systems. Participants study the cases of SA in various countries in Asia, Africa and Latin America to share and exchange the ideas how to apply the case studies for agricultural development in participants' countries.
Course Key Words	Agroforestry, organic farming, agroecology, project proposal.
Academic Goal	1) To understand the basic knowledge on sustainable agriculture and 2) to be able to discuss how to develop sustainable agriculture in home country.
Course Schedule	<ol style="list-style-type: none"> <li>1. Course introduction: Why, what, and how will we study about SA?</li> <li>2. Why and how has SA been developed? (Background and history of SA)</li> <li>3. What should we “sustain” in agriculture? (Theories of SA)</li> <li>4. What are the differences between “organic” and “modern” agriculture?</li> <li>5. How sustainable is agriculture in your country?</li> <li>6. How can we improve “organic” and “modern” agriculture to be more sustainable?</li> <li>7. What is agroforestry? (Background, history, and current status)</li> <li>8. What are the advantages and disadvantages of agroforestry?</li> <li>9. How sustainable are agroforestry systems in the tropics?</li> <li>10. How successful are agroforestry projects?</li> <li>11. How can we develop agroforestry projects?</li> <li>12. Conclusion: What can we share with farmers and consumers?</li> <li>13-15 Excursion (Farm stay and/or charcoal making)</li> </ol>
Textbooks, References, and Supplementary Materials	<p>Altieri, MA and Nicholls, CI, Agroecology and the Search for a Truly Sustainable Agriculture. UNEP, 2005  <a href="http://www.agroeco.org/doc/agroecology-engl-PNUMA.pdf">http://www.agroeco.org/doc/agroecology-engl-PNUMA.pdf</a></p> <p>Nair, PKR (ed.) An Introduction to Agroforestry. Kluwer, 1993  <a href="http://www.worldagroforestry.org/units/library/books/PDFs/32_An_introduction_to_agroforestry.pdf?n=161">http://www.worldagroforestry.org/units/library/books/PDFs/32_An_introduction_to_agroforestry.pdf?n=161</a></p>
Grading Philosophy (Percentage / Criteria / Methodology)	Attendance and report presentation.
Other (i.e. Expectations on Classroom Conduct and Decorum etc.)	Participants are expected to prepare answers to the class topic each week, and to understand the indicators of sustainability in agriculture.

Advanced Environmental Agriculture and Food Technology Course No.12

(Faculty of Agriculture, Tokyo University of Agriculture and Technology)

Course Name	Experiment Course on Food Production and Agro-environment
Instructor Name	Tasuku Kato, Hirotaka Saito, Sakae Suzuki,
Office Hours and Contact Information	By appointments only
Course Number	TBA
Course Structure	Exercise
Term, Meeting Days, Time and Location	TBA
Course Credits	1
Course Overview	In this course, basic laboratory/field experiment is provided in food production and environmental agriculture fields, i.e., knowledge for plant production and molecular science, or soil laboratory tests soil physical and mechanical aspects. Experiment methods and data analysis can be obtained from this course.
Course Key Words	Plant production, Enzyme, Tissue culture, Environmental agriculture, Soil classification, soil physical property
Academic Goal	The participants learn how to conduct experiment and data analysis.
Course Schedule	15 menus are customized in experiment class in several study fields.
Textbooks, References, and Supplementary Materials	Provided at each lecture.
Grading Philosophy (Percentage / Criteria / Methodology)	Attendance 50% and Report 50%
Other (i.e. Expectations on Classroom Conduct and Decorum etc.)	