Module Code	19349030	Course Term
Course Subject Name	**Agri-Food Production System Engineering**	Autumn Semester
Course Tutor	**Yasumaru Hirai**	
Credit	2	Taught Day
Schools	School of Agriculture	WED-3
Taught Year		
Campus	Ito campus	
Subject Area		
Course Subject Classification	Specialized Subject	Wednesday, 3rd period (13:00-14:30)
Course Requirements		
Course Requirement (Pre-requisite)	Basic knowledge in Elementary Calculus, Ordinary High School Physics and Mathematics	

Course Outline

Agri-food production system engineering is essential to develop production, processing and distribution systems for safety, security and high quality agri-foods. In this course, students can learn current situation of agricultural production and acquire fundamental knowledge regarding “agro-informatics” and “heat and mass transfer” used in the Agri-food production system engineering.

key words

ICT (information and communication technology), Sensor network system, Social networking services, Agro-informatics, Sensor, Rice production, Sustainable agriculture, Heat and mass transfer, Modeling

Study Objectives (General)

Study Objectives (Specific)

Students understand basic knowledge and technologies related to smart agriculture based on ICT
Students learn about how to use these knowledge and technologies in agriculture
Students understand current situation of paddy farming in Japan.
Students understand necessity of the use of organic matter in paddy farming.
Students understand the fundamentals of heat transfer
Students understand heat transfer problems in postharvest processing

Course Plan

1. Modeling and simulation of farm machinery for optimal design（10/2）(Muneshi MITSUOKA)
2. History and current situation of rice production in Japan (10/9) (Yasumaru HIRAI)
3. Rice production using information technologies (10/23) (Yasumaru HIRAI)
4. Rice production systems using organic matter resources in a local region (10/30) (Yasumaru HIRAI)
5. Trend of mechanization in Japan for improvement of agricultural production（11/6）(Eiji INOUE)
6. Fundamental of heat transfer for good understanding postharvest systems (11/13) (Fumihiko TANAKA)
7. Application of CFD to postharvest system design and optimization 1 (11/20) (Fumihiko TANAKA)
8. Application of CFD to postharvest system design and optimization 2 (11/27) (Fumihiko TANAKA)
9. Technical tour to agricultural facilities (12/4) (Fumina TANAKA)
10 Fundamental knowledge on ICT in agriculture (12/11) (Takashi OKAYASU)
11 Smart sensors, devices and technologies for agriculture (12/18) (Takashi OKAYASU)
12 Smart greenhouse based on UECS platform (12/25) (Takashi OKAYASU)
13 Fabrication of sensing device 1 (1/8) (Takashi OKAYASU)
14 Fabrication of sensing device 2 (1/22) (Takashi OKAYASU)
15 (1/29, 2/5) Extra day

Course Approaches	1. This course will involve lectures, student presentation, computer exercises, and fabrication of sensing device using a microcomputer "Arduino". 2. Students will have opportunities to take small tests, make presentations and submit report assignments. 3. Several lectures will use a computer (Microsoft Excel).	
Textbooks	Learning materials will be provided by the instructors.	
Reference Books		
Study consultation (office hour)	Yasumaru HIRAI Office: West Bldg. 5 #836a Office Hours: 16.30-17.30 (Wednesday) Email: hirai@bpes.kyushu-u.ac.jp Phone: Hirai 092-802-4634	Eiji INOUE Office: West Bldg. 5 #878 Office Hours: 16.30-17.30 (Monday) Email: inoeiji@bpes.kyushu-u.ac.jp Phone: 092-802-4633
	Fumihiko TANAKA Office: West Bldg. 5 #873 Office Hours: 16.30-17.30 (Monday) Email: fumit@bpes.kyushu-u.ac.jp Phone: 092-802-4636	Takashi OKAYASU Office: West Bldg. 5 #877 Office Hours: 16.30-17.30 (Wednesday) Email: okayasu@bpes.kyushu-u.ac.jp Phone: 092-802-4632
	Muneshi MITSUOKA Office: West Bldg. 5 #836b Office Hours: 16.30-17.30 (Monday) Email: mitsuoka@bpes.kyushu-u.ac.jp Phone: 092-802-4635	Fumina TANAKA Office: West Bldg. 5 #874 Office Hours: 16.30-17.30 (Wednesday) Email: fuminat@bpes.kyushu-u.ac.jp Phone: 092-802-4637
Exams/Results Evaluation Method	Hirai(Lecture 1-3): Attendance : 60%, Report: 40% Inoue(Lecture 4): Attendance : 60%, Report: 40% Mitsuoka(Lecture 5): Attendance : 60%, Report: 40% Tanaka & Tanaka(Lecture 6-9): Attendance : 60%, Report: 40% Okayasu(Lecture 10-14): Attendance : 30%, Report: 40%, Fabrication: 30%	
Others		