

## Curriculum of “Tsuruga Summer Institute on Nuclear Energy 2010”

Day 1<sup>st</sup>: September 6 (Mon) at Wakasa Wan Energy Research Center (WERC)

April 26<sup>th</sup>, 2010

	Items	Outline	Remarks
AM	(9:00-9:20) ◆ <b>Opening Address</b>	-Opening address *	*Principal of this course: Associate Professor Tamagawa of Fukui Univ. * Director of WERC
	(9:20-9:40) ◆ <b>Orientation</b>		By JAEA
	(9:40-10:30) ◆ <b>Comprehension Test (Pre-Test)</b>	A preliminary survey of the student's knowledge level of each following issue: “energy and environment”, “nuclear energy policy”, “general knowledge on nuclear”, “nuclear power generation” and “nuclear fuel-cycle”	Aiming at learning fundamental issues Total: 100 questions
	(10:40-12:00) ◆ <b>Lecture- I: “The current state of LWR nuclear fuel-cycle (Plu-Thermal)” and its prospect</b>	The effective use of uranium is stipulated as Japan's nuclear energy policy (Hatoyama's 25% CO2 reduction target). Learning about “Plu-thermal” plan, using plutonium generated from LWR as its fuel, and the current state and its prospect.	<Instructor> By KEPCO
PM	(13:00-13:15) ◆ <b>Outcome Report of “Overseas Educational Training in INSTN/SACLAY 2009”</b>	Presentation by last year's participants to improve motivation of 2010 participants: Result of “Overseas Educational Training in INSTN/SACLAY, CEA in France”	*Reporter: Participants in overseas training in France (Fukui University)
	(13:15-13:40) ● <b>English Discussion-I</b> (Explanation on discussion manual)	- Instructions of English discussion (how to conduct discussions) (JAEA) -Grouping, divided into groups (5-6 in each group) -Foreign lecturers, JAEA employees who work overseas, foreign researchers, foreign students of Fukui University, and English teachers of Fukui Univ. join discussions.	*Members: foreign lecturers, 3 from Fukui University. 1 from Kanazawa University 4 from JAEA

(13:40-14:00) ● <b>English Discussion-I</b> (Self-introduction and division of roles)	-Moving to each discussion room (3 rooms) -Self introduction - Division of roles: Selection of 1 leader, 2 secretaries, 2 or 3 data creation members and 1 presenter	
(14:00-15:30) ● <b>English Discussion-I</b> (Discussion)	<u>Discussion Theme</u> Should Japan promote nuclear energy more?	
(15:40-16:20) ● <b>English Discussion-I</b> (Summarizing & Making Presentation Materials)	-Summarization of discussion outcome -Presentation in Power Point	
(16:30-17:40) ● <b>English Discussion-I</b> (Oral report and Q&A)	-Oral Presentation in English -10-minute-presentation by each group (8 minutes for oral report and 2 minutes for Q & A)	
(17:40-17:50) ● <b>English Discussion-I</b> (Comment on Discussion Outcomes)	-Whole comment on discussion outcomes	Commentator: Mr. Asai, Associated Professor of Fukui Univ.
(17:50-18:00) ◆ <b>Questionnaire Survey</b>	Conduct the questionnaire survey every day *	This result is analyzed and reported on the final day.
(18:00-) ◆ <b>Moving</b>	Moving from WERC to Kushikawa	by bus
(18:30-) ◆ <b>Reception</b>	Wine Party*	*At JAEA Kushikawa Guest House

**Day 2<sup>nd</sup>: September 7 (Tue) at INITC (JAEA), Mihama NPP (KEPCO), Tsuruga Unit 3/4 (JAPCO), JAEA Decommissioning Center Fugen**

	Items	Outline	Remarks
AM	(9:00-10:20) ◆ <b>Lecture -II:</b> “ <b>Safety of LWR and Public Acceptance</b> ”	Learning safety measures after LWR accidents and the results of survey on attitudes of the society toward LWR: how much the society accepts the LWR safety system and nuclear energy	<Instructor> INSS
	(10:30-12:00) ◆ <b>Lecture -III: (Foreign lecture)</b> “ <b>Experiences in FBR operations ( PHENIX &amp; Super-PHENIX)</b> ”	Learning major from past trouble cases at Phenix and its Safety (In English)	<Instructor> France CEA (Mr. J. Guidez, Former Head of Phenix (now Headquarters CEA)
PM	(12:50-13:00) ◆ <b>Moving</b>	-Moving from INITC to Mihama NPP	
	(13:00-15:00) ◆ <b>Site Tour - I:</b> “ <b>Mihama NPP</b> ” (KEPCO) &The Exhibition Hall	-Learning the outline of the injured & dead accident caused by ruptured steam piping of secondary system at Mihama NPP No.3 of August in 2004, and see the broken SG (the first ECCS accident) at the exhibition hall to understand safety measures toward this kind of accidents.	
	(15:00-15:30) ◆ <b>Moving</b>	-Moving from Mihama NPP to Tsuruga NPP	by bus
	(15:40-17:00) ◆ <b>Site Tour -II:</b> “ <b>Tsuruga NPP</b> ” (JEPCO) & The Exhibition Hall	-Visit Tsuruga No. 3 & 4 units (APWR construction field) -Visit the exhibition hall to learn existing type of PWR and improved type of PWR.	The students are divided into 2 groups to look around the facility.
	(17:00-) ◆ <b>Moving</b>	-Moving from Tsuruga NPP to Fugen	by bus
	(17:10-18:00) ◆ <b>Site Tour -III:</b> “ <b>Decommissioning Center Fugen</b> ”	-Learning future decommissioning program of JAEA through this visit to Fugen	
(18:00- ) ◆ <b>Moving</b>	-Moving to hotel	by bus Questionnaire survey at hotel	

Day 3<sup>rd</sup>: September 8 (Wed) at INTIC (JAEA), FBR MONJU

	Items	Outline	Remarks
AM	(9:00-12:00) ◆ <b>Site Tour - IV</b> ”Prototype FBR MONJU”	-Learning FBR plant development for nuclear fuel-cycle under the national policy through Prototype FBR “MONJU” visit.	<ul style="list-style-type: none"> <li>• Inside Container Vessel (in the controlled area)</li> <li>• Inside Central Control Room (in the controlled area)</li> <li>• “MONJU” PR hall</li> </ul>
PM	(13:00-14:20) ◆ <b>Lecture - IV</b> ”Concept of FBR”	Learning FR basic know ledge including breeding mechanism of FBR using metal sodium as a coolant (the use of fast neutron), and such features as plant features and reactor features.	<Instructor> Dr. H. Mochizuki, Professor of Nuclear Energy Safety Engineering, Fukui University
	(14:20-14:40) ◆ <b>Topics-II</b> -Preparation for Q&A with ”MONJU researchers and engineers” (Explanation of Discussion Manual)	-Grouping: divided into 5 or 6 groups -Instructions of Q&A (for all students)	By JAEA At Meeting room No.1, INTIC
	(14:50-16:30) ◆ <b>Topics-II</b> -Q&A with ”MONJU researchers and engineers” (Discussion in each group)	-Moving to each room -Discuss the issues on what questions the students have and about w hat they are worried concerning “MONJU” w ith researchers and engineers	Some handouts are prepared for the students in advance. They must learn before the discussion.
	(16:50-17:30) ◆ <b>Topics-II</b> -Summarization of Discussion Plenary Q&A	-Q&A focusing on the questions w hich have already delivered in each group but were not obtained their answers	At Meeting room No.1, INTIC
	(17:30-17:40) <b>Questionnaire survey</b>		
	(17:40- ) ◆ <b>Moving</b>	-Moving to hotel	

**Day 4<sup>th</sup>: September 9 (Thu) at Monju Simulator & FBR Training Facility (INITC)**

		Items	Outline	Remarks
A Gr.	AM	(9:00-12:00) ◇ <b>Exercise - I:</b> <b>“Simulator Operation”</b>	Experience the nuclear reactor operation by using the MONJU simulator used for operators' training.	180 min.
	PM	(13:10-15:00) ◇ <b>Exercise -II:</b> <b>“In Service Inspection”</b>	Learning FBR maintenance technology through practice of ISI (non destructive testing) under development at MONJU	110 min.
		(15:20-16:50) ◇ <b>Exercise -III:</b> <b>“Experience of Sodium Handling Technology”</b>	Experience sodium handling technology which is one of FBR technologies, including sodium fire extinguishing, sodium combustion and sodium chemical reaction.	90 min.
B Gr.	AM	(9:00-10:30) ◇ <b>Exercise - III:</b> <b>“Experience of Sodium Handling Technology”</b>	Ditto	90 min.
		(10:50-12:40) ◇ <b>Exercise -II:</b> <b>“In Service Inspection”</b>	Ditto	110 min.
	PM	(13:50-16:50) ◇ <b>Exercise - I:</b> <b>“Simulator Operation”</b>	Ditto	180 min.
		(17:00- 17:10) <b>Questionnaire survey</b>		
		(17:10- ) ◆ <b>Moving</b>	-Moving to hotel	

Day 5<sup>th</sup>: September 10 (Fri) at WERC

	Items	Outline	Remarks
AM	(9:00-9:15) ◆ <b>Opening Address for Open Lecture</b>	Opening Address*1 Speech by Guest of Honor*2	*1: Fukui University *2: Fukui governor *2: Tsuruga Mayor
	(9:15-9:55) ◆ <b>Open Lecture - I: “MONJU” related (undecided)</b>	Lecture on “Monju” that reopened after shutdown	JAEA
	(10:00-11:30) ◆ <b>Open Lecture -II: “Global development strategy of a next-generation reactor (Long-life ultra-compact reactor)” (Tentative)</b>	Learning a next-generation reactor backed by Bill Gates’ venture firm which would operate for up to 100 years on depleted uranium without refueling (Consecutive Interpretation)	<Speaker> Terra Power, U.S Venture Firm (Dr. Jon McWhirter)
	(11:35-12:15) ◆ <b>Open Lecture -III: “Development of Next Generation Reactor (4S)</b>	Learning a next generation reactor (4S: Super- Safety, Small and Simple) that can run for three decades without refueling. Toshiba that is expected to team up with Bill Gates’ company is developing the reactor.	<Speaker> TOSHIBA

PM	(13:15-14:45) ◆ <b>Open Lecture - IV</b> “ <b>Nuclear Power Education System and the Challenges in France</b> ” (Tentative)	Broaden an international point of view through learning nuclear power education system, policy and challenges in a nuclear power, France. (Consecutive interpretation)	<Speaker> France CEA / Director of Nuclear Education and Training (Dr.C.GUET)
	(14:45-14:50) ◆ <b>Closing Address</b>	Closing Address by Host	JAEA
	(14:50-15:50) ◆ <b>Site Tour - V:</b> “ <b>Wakasa-Wan Energy Research Center</b> ”	Learning radiation utilizing technology including cancer treatment via accelerator at WERC	Students are divided into 3 groups
	(16:00-16:40) ◆ <b>Comprehension Test (Post-Test)</b>	Conduct the same comprehension test as pre-test.	
	(16:50-17:20) ◆ <b>Grading of the Test</b>	<ul style="list-style-type: none"> <li>・ Grading of the test with explanation of correct answer</li> <li>Comparing with pre-test's result for each category</li> <li>・ Taking Ceremonial Photographs</li> </ul>	Self-rating
	(18:00-) ◆ <b>Friendship Event</b>	Barbecue with participants including local people	TOYOBO Club House

**Day 6<sup>th</sup>: September 11 (Sat) at Tsuruga College**

	Items	Outline	Remarks
PM	(9:00-12:00) ◆ <b>Learning Tsuruga, NPP site location</b>	<ul style="list-style-type: none"> <li>▪ Development of Used Gum Rollers (Daitetu Kenki)</li> <li>9:00-10:00</li> <li>▪ Development of Refining Technology for Nuclear Equipment Lubricating Oil (Plant Technos) 10:15-11:15)</li> <li>▪ Tour to facilities in Tsuruga (11:30-11:50)</li> </ul>	*Leaving hotel at 8:50
	(12:00-12:50) -Lunch	-Moving to Tsuruga Collage after lunch	
	(12:50-15:40) ◆ <b>[Topics-III] Thinking about Nuclear Power Safety and Symbiosis with the locals</b>	<ul style="list-style-type: none"> <li>▪ Nuclear Power Plant Safety and Symbiotic relationship with the locals</li> <li>▪ Presenting points for dialogues</li>   <li>▪ Presenting topics for dialogues</li> <li>▪ Theme: Nuclear Power Plant &amp; Symbiosis with the Locals for the future</li> <li>▪ .Dialogues in groups (8 groups / 5 for each (5 students, 1or 2 local people, 1 coordinator from Fukui University)</li> <li>▪ Presentation by groups (Students &amp; Locals, five minutes for each)</li>   <li>▪ Questionnaires</li> </ul>	<p>Fukui University (Associate Prof. Kawamoto)</p> <p>Auditor of Youth Association of Council for Nuclear Peaceful Use in Fukui prefecture</p> <p>Mr. Kihara</p>
	(15:40-16:00) ◆ <b>Evaluation of Trainings</b>	Analyzing reports for the questionnaire survey on each training item (subject)	
	(16:00-16:20) ◆ <b>Closing Ceremony</b>	<ul style="list-style-type: none"> <li>-Closing address*</li> <li>-Award of a certificate (Fukui University) Prof. Tamagawa)</li> </ul>	WERC