

Course Title	Introduction to Information System	
Registration Code	L100120001	
Number of Credits	2	
Years of Eligible Graduate Students	1-2	
Semester	1st	2nd
Period	Fri., 3rd (only for OPU students)	Tue., 3rd (only for CPU students)
Room	B4-WK-301	B115
Instructors	Atsushi Ashida, Michifumi Yoshioka and Hidekazu Yanagimoto	Takashi Toriu and Tomohito Takubo
Office hours	Tuesday, 14:35-16:05 Bldg. B11, 4th floor, Room No.405, (Nakamozu Campus, OPU)	
Goals of the course	<ol style="list-style-type: none"> 1. Acquiring knowledge on fundamentals of information science and stochastic process 2. Acquiring knowledge on neural networks and its application to intelligent signal processing 3. Understanding the above topics based on implementations by using computer languages and simulations 	
Textbooks	An Information-Theoretic Approach to Neuro Computing, Gustavo D.D. Obradovic (Springer).	
Books of reference		
Allied subject		
Homework (Preparing for the		
Course outline	<ol style="list-style-type: none"> 1. Fundamentals of information science, Entropy; 2. Kullback-Leibler entropy; 3. Mutual information; 4. Coding theory; 5. Neural network models; 6. Learning paradigms; 7. Feed forward networks; 8. Stochastic recurrent networks; 9. Unsupervised competitive learning; 10. Linear feature extractions; 11. Principal component analysis; 12. Optimal reconstruction; 13. PCA and neural networks; 14. Independent component analysis; 15. Mutual information as criterion of ICA 	
Class schedule	1st Fundamentals of information science, Entropy (chapter 2.1.1-2) 2nd Kullback-Leibler entropy (chapter 2.1.3) 3rd Mutual information (chapter 2.1.4-7) 4th Coding theory (chapter 2.1.8) 5th Neural network models (chapter 2.2.1-2) 6th Learning paradigms (chapter 2.2.3) 7th Feed forward networks (chapter 8th Stochastic recurrent networks (chapter 2.2.5) 9th Unsupervised competitive learning (chapter 2.2.6-7) 10th Linear feature extractions (chapter 11th Principal component analysis (chapter 3.1.1) 12th Optimal reconstruction (chapter 13th PCA and neural network (chapter 14th Independent component analysis (chapter 4.1) 15th Mutual information as criterion of ICA (chapter 4.2)	
Evaluation	Evaluation will be based on the reports and discussions in each class.	
Remarks		