

Akashi College		Year	2023		Course Title	Exercise in Data Science	
Course Information							
Course Code		5119		Course Category		General / Compulsory	
Class Format		Lecture		Credits		School Credit: 1	
Department		Architecture		Student Grade		1st	
Term		Second Semester		Classes per Week		2	
Textbook and/or Teaching Materials							
Instructor		TSUCHIDA Takayuki,NOMURA Hayato,ENOMOTO Ryuji					
Course Objectives							
Can explain an overview and application examples of information technology, such as IoT, machine learning, and artificial intelligence.							
Can explain an overview of computers and networks.							
Can explain an overview of information security and examples of cyberattacks and defense.							
Can execute data utilization and analysis from big data and IoT, using a data processing language (Python).							
Rubric							
		Ideal Level		Standard Level		Unacceptable Level	
Achievement 1		Can fully explain an overview and application examples of information technology, such as IoT, machine learning, and artificial intelligence		Can explain an overview and application examples of information technology, such as IoT, machine learning, and artificial intelligence		Cannot explain an overview and application examples of information technology, such as IoT, machine learning, and artificial intelligence	
Achievement 2		Can fully explain an overview of computers and networks		Can explain an overview of computers and networks		Cannot explain an overview of computers and networks	
Achievement 3		Can fully explain an overview of information security and examples of cyberattacks and defense		Can explain an overview of information security and examples of cyberattacks and defense		Cannot explain an overview of information security and examples of cyberattacks and defense	
Assigned Department Objectives							
Teaching Method							
Outline		The aim is to develop the knowledge and skills for the appropriate and effective use of information and information technology, to develop the ability to use them practically, and to develop an attitude toward proactively participating in an information society. The course will be held as an early introductory education to foster human resources capable of utilizing, analyzing, and evaluating real data such as "IoT," "big data," and "AI" following their acquisition of knowledge on "mathematics/data science/AI." Students will learn about real-world issues and how to resolve them appropriately through exercises, using real data and issues, and other practical examples in society by utilizing mathematics, data science, and AI. This lecture will be conducted by a faculty member who has been engaged at a company in middleware (database) research and development.					
Style		Students will practice programming, data analytics, and analysis with examples using the Python program. Quizzes will be conducted every lesson to test students' understanding. Students will be evaluated based on quizzes and submitted work which serve as tests.					
Notice		Students who miss 1/3 or more of classes will not be eligible for a passing grade.					
Characteristics of Class / Division in Learning							
<input checked="" type="checkbox"/> Active Learning		<input checked="" type="checkbox"/> Aided by ICT		<input checked="" type="checkbox"/> Applicable to Remote Class		<input checked="" type="checkbox"/> Instructor Professionally Experienced	
Course Plan							
			Theme		Goals		
2nd Semester	3rd Quarter	1st	Introduction to programming (1)		Learn Python programming syntax		
		2nd	Introduction to programming (2)		Learn Python programming syntax		
		3rd	Introduction to programming (3)		Learn Python programming syntax		
		4th	Deep learning		Learn about implementing deep learning through the use of sample codes		
		5th	Data science for control system		Learn about overview of deep learning from the point of view of control system, and attention is also given to applied problems in control system		
		6th	Data Visualization		Can demonstrate data visualization using a web server		
		7th	Statistical analysis (1)		Can demonstrate a simple regression analysis		
		8th	Statistical analysis (2)・Mutual Evaluations between students		Can demonstrate simple clustering (k-means)・Mutual Evaluations between students		
	4th Quarter	9th	Computer configuration and programming		Check a computer's configuration and performance by obtaining system information and creating a simple benchmark with the use of Python		
		10th	Parallel processing		Learn how to write and execute parallel processing in Python to speed up your program		
		11th	Automated file processing		Automate file processing in Python and learn how to optimize simple tasks		
		12th	Automated web information retrieval		Learn about web scraping, a method for automatically retrieving web information in Python		

		13th	Network processing (1)	Learn how to automate web-related tasks by programming
		14th	Network processing (2)	Learn more about handling Internet communication through Python
		15th	Security and summary of studies	Reproduce vulnerable websites in Python and learn about the need for security by verifying their behavior Review the previous exercises and learn how they relate to each other and how they can be combined to build a system
		16th	Final exam	None

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	0	0	0	0	100	0	100
Basic Proficiency	0	0	0	0	40	0	40
Specialized Proficiency	0	0	0	0	40	0	40
Cross Area Proficiency	0	0	0	0	20	0	20