

Akashi College		Year	2023	Course Title	Introduction to Data Science
Course Information					
Course Code	5118		Course Category	General / Compulsory	
Class Format	Lecture		Credits	School Credit: 1	
Department	Electrical and Computer Engineering		Student Grade	1st	
Term	First Semester		Classes per Week	2	
Textbook and/or Teaching Materials					
Instructor	TSUCHIDA Takayuki,NOMURA Hayato				
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 learn information technology literacy (knowledge through lectures, and study of practical examples). 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					
☒ Active Learning		☒ Aided by ICT		☒ Applicable to Remote Class	
				☒ Instructor Professionally Experienced	
Course Plan					
			Theme	Goals	
1st Semester	1st Quarter	1st	The relationship between information technology and each department, and the components of information technology	Can explain the rules for using information systems in schools. Can explain application examples of information technology, such as IoT, machine learning, and artificial intelligence in each department (MECA). Can explain the components of information technology and relevant laws and regulations.	
		2nd	Application examples of information technology in MECA and an overview of the information technology used (1)	Can explain examples in Department M (automatic driving-related technology: traffic sign recognition), Department E (Go using deep learning), etc., and an overview of the information technology used	
		3rd	Application examples of information technology in MECA and an overview of the information technology used (2)	Can explain examples in Department C (infrastructure maintenance using IoT: motorway turbines and GIS), Department A (building security and contemporary art), etc., and an overview of the information technology being used	
		4th	Application examples of information technology in MECA and an overview of the information technology used (3)	Can explain the details of the information technology used in MECA cases	
		5th	Supervised and unsupervised learning	Can explain machine learning with or without labeled data	
		6th	Regression analysis	Can explain regression analysis	
		7th	Review	Reflection on studies so far	
		8th	Mutual Evaluations between students	Mutual Evaluations between students	

	2nd Quarter	9th	Computer fundamentals (1)	Understand the structure of a computer, and what "calculation" by computer means.
		10th	Computer fundamentals (2)	Understand the role of an operating system.
		11th	Network fundamentals (1)	Understand the roles of information and communication networks in society.
		12th	Network fundamentals (2)	Understand network configurations and mechanisms.
		13th	Information security fundamentals	Understand the need for information security.
		14th	Cyberattacks and defense (1)	Understand the major attack tactics.
		15th	Cyberattacks and defense (2)	Understand defense tactics against attacks.
		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