Integrated coding Instructor

2019

IQCS

First written test

Field	Coding area	Qualification	Integrated coding Instructor	Valid date	2019
Exam type	**Multiple choice**	**No. of Ques.**	**40**	**Exam hour**	**90 minutes**

Title	Sub title	Detail	No. of Ques.	Distribution
Teaching method and teaching ability	1. Attitude	• Appearance, expression, greeting, confidence, leisure, enthusiasm, and posture	4	10%
	2. Conversational method	• Clear pronunciation, speed, standard language, honorific, speech habits, and voice		
	3. Lecture development	• Introduction of lecture, introduction (Motivation, content understanding, systematic development), delivering core content, conclusion, time compliance		
	4. Communication	• Expression, terminology / abbreviation explanation, parable technique, understanding and confirmation of question contents, consensus formation, fact / opinion		
	5. Teaching method	• Teaching method (use of cases, reports, teaching materials, diversity) • Directive tools (screen transitions, using beams)		
Understanding computing	1. Information society and life	• Correct etiquette of using a computer • Understanding and protection of copyright • Prevention of internet and game addiction	4	10%
	2. Understanding information devices	• Understanding computer components • Understanding of software • Understanding the operating system • Understanding the internal structure of computers		
	3. Understanding information processing	• To express numbers and text information : Concept of binary number : Number and binary number : Text and binary number		
Computational	1. Understanding and applying	• The age of integrating and computing thinking commentary.	16	40

Thinking and problem solving	computational thinking skills	• Significance and importance of procedural problem solving • The difference between digital and analog information. • Understand and express the concepts of data and information. • Differentiate and utilize types of information. • Digital representation of various types of information. • Understand and utilize the components of computing thinking.		
	2. Problem Analysis and Structuralization	• Understand and analyze a given problem. • Explore and develop and apply problem-solving methods. • The role of data in problem-solving • Effective improvement of problem-solving methods. • Simplify by removing unnecessary elements. • Organize and express data in various ways. • Understand and structure the concepts of linear and nonlinear structures		
	3. Solving problems in daily life through computing thinking	• Simplify a given problem. • Understand and apply abstraction • Find patterns and formulate them by searching for recurring trends and rules. • Describe the problem-solving method in order. • Finding solutions to various problems and choosing the right method • Explanation of problems of problem-solving methods and explanation of improving methods		
Algorithm design	1. Creating an algorithm for problem-solving	• Express the problem-solving process in order. • Understanding that algorithms are the order in which things happened. • Express the problem-solving process with pictures or symbols. • Express the problem-solving process in order. • Understand the relationship between a computer's functions and algorithms. • Understanding algorithm • Design the algorithm. • Expressing algorithm. • Find and correct errors in algorithms.		

		• Modify to a more effective algorithm		
	2. Algorithm design of complex structures	• Understanding the relationship between a computer's functions and algorithms. • Predicting the operational results of algorithms. • Analyze algorithm. • Understanding of the control structure of algorithms. • Complex representation of the control structure of an algorithm.		
Programming language understanding and programming	1. Understanding the programming language	• Concepts and types of programming languages. • Write input/output statement of data. • Recognize the beginning and end of the program. • Explanation of the procedure for executing the programming language. • Understanding and using conditional statements and repeated statements. • Understanding and using variables and operators.	16	40
	2. programming design	• Understanding the conditions and needs of the problem. • Efficient program design. • Check and correct program error. • Understanding complex structures and programming		
	3. Block coding	• Understanding screen configuration and key terms. • Effect of continuous background using coordinates. • Creating a Story. • Use of sequential and repetitive structures that fit the situation. • The use of multiple selection, multiple repetition structure. • Implement different actions considering different conditions. • Understand variables and constants, and write input and output programs. • Understand and use coordinates to create programs • Know the difference between signal and replication and create a program • Configure two or more scenes through scene connections. • Writing programs using functions • Writing programs using lists.		

2nd **practical test**

Field	Coding area	Qualification	Integrated coding Instructor	Valid date	2019
Exam type	Short answer	No. of Ques.	3	Exam hour	120 minutes
Title	Sub title	Detail		No. of Ques.	Distribution
Teaching method and teaching ability	1. Attitude	• Appearance, expression, greeting, confidence, leisure, enthusiasm, and posture			50
	2. Conversational method	• Clear pronunciation, speed, standard language, honorific, speech habits, and voice			
	3. movement	• Gaze treatment, gestures, space utilization, and Show-See-Speak			
	4. Lecture development	• Introduction of lecture, introduction (Motivation, content understanding, systematic development), Delivering core content, conclusion, time compliance		2	100
	5. Communication	• Introduction of lecture, introduction (Motivation, content understanding, systematic development), Delivering core content, conclusion, time compliance			
	6. Teaching method	• Teaching method (use of cases, reports, teaching materials, diversity) • Directive tools (screen transitions, using beams)			
Understanding coding	1. Problem-solving	• The problem-solving process can be expressed in pictures or symbols. • The problem resolution result can be expressed in order.			
	2. Algorithm	• Understand that the algorithm is in order of occurrence. • Express the repetition structure as a flowchart. • Express the selection structure as a flowchart. • Find and correct errors in the algorithm. • Find and apply the most effective algorithms.			
The Practice of coding	1. Game creation Block coding (sequential, iteration, condition, signal, variable, random number)	• Effective resolution of missions through 'Repeat ~' command. • Execute other contextual commands through the 'if' command. • Perform contextual commands through the '~ if or if' command. • Create dialog animations for multiple sprites considering the sequence of time. • Increase the score by utilizing variables. • A game played for 30 seconds using a watch. • A work of sending and receiving promised signals between sprites.			

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Exam type	**Short answer**	**No. of Ques.**	**3**	**Exam hour**	**120 minutes**
Title	**Sub title**	**Detail**		**No. of Ques.**	**Distribution**
	2. Math coding (Create a private operation calculator)	• Write the flow chart according to the algorithm and write the script accordingly. • Calculate the entered data to output the correct results.			
	3. Math coding (expressing an analogue clock)	• Write the flow chart according to the algorithm and write the script accordingly. • Correct control with an understanding of the angle.			
	4. Math coding (Find maximum, minimum)	• Understand and use comparative computations and temporary variables. • Understand the arrangement and use the list.			
	5. Math coding (Find symmetric number)	• Understanding mathematical concepts, implementing algorithms that match them, and writing scripts.			

2nd **practical test**

Integrated coding Instructor Level II

Field	Block coding and physical computing education	Qualification	Integrated coding Instructor	Valid date	2019
Exam type	**Multiple choice/ Short answer**	**No. of Ques.**	**3**	**Exam hour**	**120 minutes**
Title	**Sub title**	**Detail**		**No. of Ques.**	**Distribution**
Teaching method and teaching ability	1. Attitude	• Appearance, expression, greeting, confidence, leisure, enthusiasm, and posture		시연	50
	2. Conversational method	• Clear pronunciation, speed, standard language, honorific, speech habits, and voice			
	3. movement	• Gaze treatment, gestures, space utilization, and Show-See-Speak			
	4. Lecture development	• Introduction of lecture, introduction (Motivation, content understanding, systematic development), Delivering core content, conclusion, time compliance		2	100
	5. Communication	• Introduction of lecture, introduction (Motivation, content understanding, systematic development), Delivering core content, conclusion, time compliance			

Field	Block coding and physical computing education	Qualification	Integrated coding Instructor	Valid date	2019
Exam type	Multiple choice/ Short answer	No. of Ques.	3	Exam hour	120 minutes
Title	Sub title	Detail		No. of Ques.	Distribution
	6. Teaching method	• Teaching method (use of cases, reports, teaching materials, diversity) • Directive tools (screen transitions, using beams)			
Understanding computing	1. Information society and life	• Correct etiquette of using a computer • Understanding and protection of copyright • Prevention of internet and game addiction			
	2. Understanding information devices	• Understanding computer components • Understanding of software • Understanding the operating system • Understanding the internal structure of computers			
	3. Understanding information processing	• To express numbers and text information : Concept of binary number : Number and binary number • : Text and binary number			
Computational Thinking and problem solving	1. Understanding and applying computational thinking skills	• The age of integrating and computing thinking commentary. • Significance and importance of procedural problem solving • The difference between digital and analog information. • Understand and express the concepts of data and information. • Differentiate and utilize types of information. • Digital representation of various types of information. • Understand and utilize the components of computing thinking.			
	2. Problem Analysis and Structuralization	• Understand and analyze a given problem. • Explore and develop and apply problem-solving methods. • The role of data in problem-solving • Effective improvement of problem-solving methods. • Simplify by removing unnecessary elements. • Organize and express data in various ways. • Understand and structure the concepts of linear and nonlinear structures			
	3. Solving problems in daily life through	• Simplify a given problem. • Understand and apply abstraction • Find patterns and formulate them by searching for recurring trends and rules.			

Field	Block coding and physical computing education	Qualification	Integrated coding Instructor	Valid date	2019
Exam type	Multiple choice/ Short answer	No. of Ques.	3	Exam hour	120 minutes
Title	Sub title	Detail		No. of Ques.	Distribution
	computing thinking	• Describe the problem-solving method in order. • Finding solutions to various problems and choosing the right method • Explanation of problems of problem-solving methods and explanation of improving methods			
Algorithm and programming	1. Expressing and managing information	• Expression of information			
		• Management of information			
	2. Practice of computing thinking	• Structuralization of the problem			
		• Abstract of the problem			
		• Modeling and simulation			
	3．Practice of algorithm	• Designing algorithms of complex structures			
		• Analysis and evaluation of algorithms			
Project performance	1. creative problem solving	• Develop creative ideas related to real life and implement algorithms for problem solving.			
	2. Physical computing	• Implement the product using sensors and actuators.			
	3．Debugging	• Present methods for finding and problem-solving errors in programming and circuit configuration.			
Computing and problem-solving	1. Integrated Activity Based on Computing Thinking	• Programing and Integrating			
		• Produce and evaluate team projects			