

# Curriculum

## 1. Major in Electronic Computational Education

## 2. Educational Objectives

- 1) Training Advanced Computing Professionals to Create a New Information Culture
- 2) Training Advanced Computing Professionals to Lead the Information Society
- 3) Training Advanced Computing Professionals to Serve the Community

## 3. Professor

Professor's name	Field of Study	note
KIM MI HYE	Computer Education, E-Learning	Head of department
BAE IN HAN	System Software	
BYEON TAE YOUNG	Mobile Internet	
KIM BYEONG CHANG	Speech and Language Processing	
SHIN JUNG HUN	HCI(Human-Computer Interaction)	
SEO DONG MAN	Multimedia Systems	
KIM KI SEONG	Cryptography, Information Theory	
JEON SU BIN	System Software, IoT(Internet of Things)	
KIM JUNG HUN	AI, Signal Processing	
CHOI SANG IL	Communications, Networks, Protocols, IoT(Internet of Things), Blockchain	

## 4. Curriculum Table - Major in Electronic Computational Education

### 1) 1st Semester (first-year student)

Semester	Subject Code	Subject Title	Credits	Remarks
1st grade (new students)	501666	Philosophy and History of Education	2	General Teaching (Required)
	501653	Educational Psychology	2	General Teaching (Required)
	501655	Sociology of Education	2	General Teaching (Required)

### 2) 2nd to 6th grade

Semester	Subject Code	Subject Title	Credits	Remarks
2024 - 1 <sup>st</sup> Semester	503019	Logic and Writing for Information and Computer Education**	2	Subject Education Area
	506359	Programming*	2	Core Subject (1)
	628612	Computer Architecture*	2	Core Subject (5)
2024 - 2 <sup>nd</sup> Semester	504854	Research and Teaching Methods for Information Subject**	2	Subject Education Area
	503016	Logic Circuits*	2	Core Subject (5)
	506551	Digital Image Processing	2	
2025 - 1 <sup>st</sup> Semester	505030	Algorithms*	2	Core Subject (2)
	628613	Operating Systems*	2	Core Subject (4)
	500566	Object-Oriented CBD Development Methodology	2	
2025 - 2 <sup>nd</sup> Semester	503116	Information Subject Education Theory**	2	Subject Education Area
	503020	Database*	2	Core Subject (3)
	628618	Software Engineering*	2	Core Subject (6)
2026 - 1 <sup>st</sup> Semester	628616	Artificial Intelligence*	2	Core Subject (2)
	506358	Data Structures*	2	Core Subject (3)
	506357	Data Structures*	2	Core Subject (4)

※ At least one course from each of the Core Subject areas (1) to (5) must be completed.

※ In the 5th semester, students must register for 'Thesis Research I,' and in the 6th semester, 'Thesis Research II' is mandatory.

### 500566 Object-Oriented CBD Development Methodology

This course provides knowledge about component-based development methods to effectively respond to the development of software that requires various users and advanced features. It covers related environments and development theories, and students will learn effective CBD methodologies through practical applications.

### 506357 Networks

This course provides a comprehensive understanding of computer networks. It explores communication methods, network configurations, communication protocols, and network software technologies. Students will also learn programming techniques for developing network communication software.

### 503016 Logic Circuits

This course is designed for understanding logical algebra and designing basic digital circuits. It covers binary number systems, truth tables, Boolean algebra,

logic circuit simplification, and sequential logic circuits. Based on these principles, students will design and simulate logic circuits such as adders, encoders/decoders, multiplexers, counters, and registers using flip-flops.

### **503020 Database**

This course introduces the fundamental concepts of databases for data processing and applications, covering topics like file storage devices, file input/output control, and multidimensional spatial files. It also includes the study of database management systems, data structuring methods, data models, and data description languages. Finally, students will learn about database design and database system applications.

### **628636 Digital Image Processing**

This course covers the theory and devices related to image processing based on digital computers. Students will study image processing components and input/output techniques. The course includes binary image processing, signal compression, noise removal, and advanced techniques such as still/moving image compression, wavelet, and fractal processing.

### **628618 Software Engineering**

Software engineering is an academic field that approaches practical problems in large-scale software system development using engineering methods. It is not limited to programming but encompasses the entire field of computer science. Software engineers must be able to solve difficult problems efficiently and cost-effectively using their diverse experience. This course provides guidelines for executing software projects, covering topics such as: Overview of Software Engineering - Requirements Engineering - Design - Programming - Testing - Maintenance

### **505030 Algorithms**

This course aims to enhance students' analytical and design thinking in algorithms through systematic learning of algorithm design techniques. The course covers basic algorithms such as search, sorting, hash tables, search trees, graph algorithms, dynamic programming, and NP-completeness. Students will also implement and test these algorithms by solving real-world problems using the C programming language.

### **628613 Operating Systems**

This course covers the basic concepts, development processes, functions, and structure of operating systems. It focuses on techniques for managing various resources within a system efficiently, including concepts such as multiprocessing, multiprogramming, time-sharing, concurrent processing, sequential process management, scheduling, memory management, and data sharing and protection.

### **628616 Artificial Intelligence**

This course introduces the concepts and methods of artificial intelligence (AI). Topics include expert systems, knowledge representation, planning and strategies for problem-solving, fuzzy theory, and its applications.

### **502021 Information Science Subject Education Theory**

This course discusses methodologies for effectively conducting computer and information science education. It covers concepts, educational content, and curricula related to computer and information science education. Additionally, students will learn how to create computer-aided learning materials and courseware, focusing on knowledge-based approaches.

### **502022 Research and Teaching Methods for Information Science Subject Textbooks**

This course addresses the preparation and selection of textbooks for middle and high school computer and information science subjects, the development of teaching plans according to learning units, teaching methods, and content evaluation techniques.

### **503019 Logic and Writing for Information Science and Computer Education**

This course focuses on educating students about the fundamental rules of logical thinking and writing, in line with the characteristics of information science and computer subjects.

## **628612 Computer Architecture**

The overall contents of the computer structure are discussed, from the basics and design of logical circuits, and the basics of Neumann-type computers to parallel processing structures.

## **506359 Programming**

This course aims to develop students' programming skills by allowing them to write programs that solve problems using the widely used C programming language. It covers the grammar and structure of the C language and provides explanations through various types of programming exercises to give students experience in the world of programming.