

For entrants in AY 2021

Appended Form 1

1. Degree to be obtained: Bachelor of Science in Informatics and Data Science	
2. Overview <p>Because the complexity of economics, society, and the environment is increasing due to rapid globalization, people with the ability to identify problems and find solutions on their own have become indispensable for various organizations. In addition, it is urgently required to develop people capable of</p> <p>and, are capable of solving individual problems in each academic field. In other words, this program aims to develop specialists who have profound knowledge and understanding for each specialized area, in addition to the basic knowledge and skills in data science and informatics.</p> <p>The data/network environment in contemporary society has been rapidly developed over the last 20 years. In particular, the amount of data is swelling rapidly (big data), data is becoming more heterogenic and increasing in variety (qualitative/quantitative data, audio, images, movies, documents, graph structures, etc.), and the travel distance and speed of data are dramatically expanding. In today's data science education, therefore, it is required to develop not only expertise in statistics and mathematics, which has been provided in conventional education, but also the ability to collect, process, and analyze various data using advanced information processing technologies and algorithms in order to contribute to the creation of new knowledge and decision making.</p> <p>However, it is difficult to develop specialists who can work in both fields of data science and informatics by providing only superficial knowledge and skills in those fields, since the two fields have become highly specialized and fragmented. This program aims to develop specialists who can exercise profound understanding and ability in areas of data analysis and system development based on hybrid capabilities in both academic fields.</p> <p>In this program, up to the second year, all students take the subjects of information mathematics that constitute the basics of information science, as well as core subjects such as probability, statistics, computer science, and applied mathematics. The core subjects are required for both courses, and all</p>	

subjects are designated as required, or elective required subjects. In the second academic year, students take common basic subjects in information science to establish a foundation for study after choosing their course, and to obtain the knowledge required for choosing a course and/or career after graduation.

In the third year, they choose either the data science or the informatics course according to their own interest and aptitude. This program provides such a complex curriculum for the early stages of education

define a research topic related to data science or informatics. Also, students are engaged in research, experimentation, and discussion under the guidance of the faculty member who is engaged in instruction for the thesis, and organize and present their results in their thesis. In these activities, they establish their acquired skills related to the development of an information infrastructure, information processing techniques, and the use of technology for producing new added value through data analysis.

3. Diploma policy (policy for awarding degrees and goal of the program)

This school educates students to become specialists with advanced capabilities in each of data science and informatics, as well as the basic abilities that consist of processing techniques based on the information technology, which are the basis of the information-intensive society of today, as well as advanced data analysis capabilities. In addition, this school aims to develop people who are capable of appropriately managing, processing, and analyzing information that has swelled significantly, and become complicated, due to such phenomena as the accumulation of big data, technological breakthroughs in fields related to artificial intelligence (AI), and the development of the IoT.

This program will award the degree of Bachelor of Science in Informatics and Data Science to students who have acquired the knowledge and abilities described below, and earned the required credits defined for the educational course:

Achievement target 1.4 are calculated based on the achievement of the Io-96- data

information technology.

Achievement target I3. Knowledge related to hardware and software, and the programming skills required for efficiently processing data.

Achievement target E. Creative and logical thinking ability for analyzing practical issues and challenges in order to provide rational solutions that match social needs, as well as the capability to realize these solutions.

4. Curriculum policy (policy for arranging and implementing the curriculum)

To enable students to achieve the targets that are defined for the program, the curriculum of the Informatics and Data Science Program is organized and implemented according to the policies described below. Academic achievement is evaluated based on the grade scores for the subjects and the level of achievement against the target defined for this program.

In the first academic year, students take liberal arts core subjects, common subjects (foreign language subjects and health and sports subjects), and fundamental subjects (subjects related to mathematics and statistics). These subjects respectively correspond to the achievement targets A, B, C1, and E; those of C1 and C2; and those of A and B.

In the second academic year, all students take the specialized core subjects. The same specialized core subjects are designated for both courses, and all of them are designated as required subjects or elective required subjects. Specialized core subjects consist of information mathematics subjects (corresponding to the achievement targets A and B), probability and statistics subjects (achievement targets A, B, D1, D2, and D3), computer science subjects (achievement targets A, B, I1, I2, and I3), and applied mathematics subjects (achievement target I1).

In the third academic year, students take subjects that are deeply related to either the data science course or the informatics course. Different specialized subjects are designated (required subjects, elective required subjects, free elective subjects, and subjects without designation) for each course. They consist of data science subjects that correspond to one or more of the achievement targets D1, D2, and D3, and informatics subjects that correspond to one or more of the achievement targets I1, I2, and I3. Students also take Seminar for Information Data Science I and II (corresponding to the achievement targets A, B, and I3) and Seminar for Information Data Science III and IV (corresponding to the achievement targets A, B, and D3) to develop practical skills for processing and analyzing actual data and designing circuits and embedded systems, and to acquire skills related to both data science and informatics.

In the fourth academic year, students prepare their graduation thesis using capabilities corresponding to the achievement targets A to E that they have acquired in the Informatics and Data Science Program. The thesis is evaluated against the achievement targets A to E based on its contents and the presentation given at the thesis presentation assembly.

5. Start time and acceptance conditions

- When to start the program:

Students are required to enroll in the English-based bachelor's degree program when they enter our university, because this program is highly specialized.

- Additional Requirements:

To determine acceptance into the English-based Bachelor's Degree program, all applicants are required to have an individual consultation with the faculty committee members in School of Informatics and Data Science. Teach-in-English course is managed with two languages simultaneously, which is categorized into Type B, except in a few classes. In this program, students are allocated to one of the two courses at the end of the second academic year. To be allocated to a course, students are required to earn 68 or more credits by the end of the second academic year.

6. Obtainable qualifications

Educational personnel certification (Information teaching and Mathematics) is awarded to the student who earns the required credits.

7. Class subjects and their contents

* For class subjects, refer to the subject table in Attachment 1. (The subject table is to be attached.)

* For the details of the class subjects, refer to the syllabus that is published each academic year.

8. Academic Achievement

The evaluation criteria are specified for each evaluation item for academic achievement, and the achievement level against the criteria is designated at the end of the semester.

The evaluation score for each evaluation item is converted to a numerical value (S = 4, A = 3, B = 2, and C = 1) and the evaluation standard for academic achievement, from when the student entered the university to the end of the last semester, is determined using these values while applying weightings. The evaluation standards consist of three levels, i.e. Excellent, Very Good, and Good.

Academic achievement	Evaluation standard
Excellent	3.00 - 4.00
Very Good	2.00 - 2.99
Good	1.00 - 1.99

Achievement evaluation	Numerical conversion
S (Excellent: 90 or more points)	4
A (Very good: 80 - 89 points)	3
B (Good: 70 - 79 points)	2
C (Passed: 60 - 69 points)	1

* Refer to the relationship between evaluation items and evaluation criteria described in Attachment 2.

* Refer to the relationship between evaluation items and class subjects described in Attachment 3.

* Refer to the curriculum map in Attachment 4.

9. Graduation thesis (graduation research) (meaning, student allocation, timing, etc.)

○ Meaning

Graduation Thesis is a comprehensive subject in which students utilize the specialized knowledge, skills, and abilities that they have acquired in the Informatics and Data Science Program to pursue an advanced research topic. To take this subject, therefore, they are required to have not only knowledge of the specialized area but also an ability for research planning, a positive attitude, a cooperative mindset, and the capacity for continuous effort. This program educates students to comprehensively improve these capabilities in order to allow them to acquire the ability to identify and solve new problems on their own.

Detailed objectives are as follows:

1. To acquire the ability to develop a research plan for their research objective on their own, and to carry out their research according to that plan.
2. To develop skills for collecting materials related to the research objective, understanding the objective, and identifying problems.
3. To develop capabilities for analyzing problems related to the research objective and providing solutions that match social needs.
4. To develop skills required for research activity related to reading, writing, and searching for information in English.
5. To develop documentation skills for organizing research results and describing the meaning and efficacy of the obtained results in logical and consistent text.
6. To develop presentation skills for delivering the research results clearly and orally, and communication skills for active discussion.

○ Student allocation method and timing

Requirements for starting the research for graduation thesis are defined in the Student Handbook.

Students in their fourth or senior year, who satisfy the requirements for starting the research for their graduation thesis, are allocated to a laboratory according to their wishes. The allocation method will be explained to the students at a briefing session that will be held before the allocation process. For students to be allocated to laboratories, an assembly and/or open laboratory event is held in February or March to show the details of research topics.

10. Responsibility

(1) Responsibility for PDCA (plan, do, check, and act) cycle

This program is executed by faculty members who support the education in the Informatics and Data Science Program. The dean of School of Informatics and Data Science takes on the responsibility for implementation of the program. It is mainly the Informatics and Data Science Program committee that reviews and makes decisions related to the processes of the PDCA cycle (plan, do, check, and act) in the council of the School of Informatics and Data Science (this is held, in principle, on the first Thursday of every month). In some cases, a working group may be organized according to direction by the dean of School in order to intensively work on a case. When it is required to consider and take some action in either of the courses, laboratories which are mainly engaged in the concerned course will take responsibility. In such a case, the dean of the school designates the person in charge.

(2) Evaluation of the program

○ Perspectives for evaluation of the program

Are class subjects arranged appropriately, while considering the aims of study and education in this program? Are the contents of classes appropriate?

Have students, on average, achieved the level that is required of them?

Is the system for achieving an upward spiral in the program functioning according to an appropriate cycle?

○ Evaluation method

Each subject in the program is evaluated based on student evaluation of the classes and achievement evaluation results.

For evaluation of the upward spiral in quality of the program, questionnaires for students are conducted in an appropriate cycle, and the opinions of ex-students and companies are collected.

○ Policy and method for feedback to students

For individual classes, the faculty member who is in charge of the class makes comments on the evaluation of the class and the achievement evaluation results.

Actions taken, such as changes to the structure of the program, are published on the web site of School of Informatics and Data Science and/or another medium with the reason.

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