College of Media Arts, Science and Technology

■ Bachelor of Science in Media Sciences and Engineering

Program Educational Objectives

We foster personnel who can creatively generate innovative technologies and scientific theories in fundamental technological domains, such as communications, which are indispensable for the development of the networked information society, and in fields that distribute and utilize diverse information content, including the Web, video, and music.

Graduate Profile	We aim to cultivate individuals who, through comprehensive study of network infrastructure technologies and information content processing - from foundational concepts to advanced applications - develop the ability to create new technologies and theories grounded in scientific evidence, and are capable of addressing challenges across a wide range of fields, including the information and communication industry, healthcare, education, and the economy.
Career Paths after Graduation / Completion	We strongly recommend that those who wish to pursue further academic study continue to graduate school. After graduation, or upon completion of graduate studies, our graduates are expected to contribute actively, both domestically and internationally, across a wide range of fields founded on information technology, including industry, research institutes, educational organizations, and public agencies. Furthermore, we hold high expectations for those who will establish their own ventures and open up new industries and domains.

Diploma Policy

We confer the degree of Bachelor of Science in Media Sciences and Engineering upon students who have acquired the knowledge and skills (Generic Competences) specified in the educational objectives of the University of Tsukuba's undergraduate program. In addition, candidates must have achieved the following outcomes, which align with the human resource development objectives of our school and college.

Knowledge and Skills (Specialized Competences)	1. Digital Contents	Ability to acquire advanced knowledge and skills related to the construction, accumulation, management, sharing, and distribution of digital contents of various types, and to utilize them in system development, content production, and analysis
	2. Network Science	Ability to acquire advanced knowledge and skills of network systems that provide, communicate, distribute, and collect information, and to apply them hands-on in development, operation, and analysis
	3. Information Media and Interaction	Ability to develop systems utilizing various media platforms, supported by advanced knowledge and skills of various forms of information presentation and representation, as well as modes of interaction with users
	4. Computing and Systems	Ability to acquire knowledge and skills to perform advanced computational processing based on the fundamentals of computer systems and programming, and to develop novel methods, models, and systems, as well as applying them to various applications
	5. Fundamentals of Mathematical Methods	Ability to acquire advanced mathematical knowledge required for data analysis and system construction, and to apply them to various practical applications
	6. Human Cognition and Society	Ability to acquire knowledge of human abilities and social activities as manifested in human cognition, kansei and social interaction, and to apply them to the development, evaluation, and analysis of information media
	7. Design and Creativity	Ability to develop awareness of the realm and foster creativity to create new "things" with elegant design, as well as running real projects in planning, production, and management.
Guidelines for Assessing Learning Outcomes	The syllabus for each course specifies the alignment between the course content and the competences outlined in the degree award policy, along with the evaluation criteria and methods (e.g., examinations and reports). The attainment of these competences is assessed based on the student's completion of the relevant course credits. The degree evaluation is conducted through the graduation research, bachelor's thesis, final presentation, and other culminating academic activities, which collectively assess whether students have acquired the knowledge and skills (competences) specified in the degree award policy.	

Curriculum Policy

We organize and implement the curriculum for the Bachelor of Science in Media Sciences and Engineering program in accordance with the following policies to ensure that students achieve the intended learning outcomes.

Curriculum Design Framework	**General Policy** We offer a curriculum in Information Media Science that integrates education in essential areas of information science and technology, centered on two core domains: network media technologies that support the accumulation and distribution of content, and content technologies for the creation and use of content. A diverse set of courses is provided to enable students to acquire both broad knowledge and advanced expertise through their own independent choices. **Course Sequence Policy** First Year Students build foundational competences in information science and technology by taking mathematics courses - such as linear algebra and calculus - that correspond to the competence "Fundamentals of Mathematical Methods", as well as information technology courses - such as literacy and programming - that correspond to "Computing and Systems". In addition, introductory courses on content processing cultivate artistic sensibilities and related skills. Second Year Students expand upon their first-year foundation and develop solid technical skills, applied capabilities, and ethical awareness. This is achieved through courses corresponding to "Network Science", such as computer networks and information theory, and to "Digital Contents", such as data engineering. Courses in cognitive science and information design foster competences related to "Human Cognition and Society" and "Design and Creativity", thereby broadening students' perspectives and strengthening their applied proficiency. Third and Fourth Years A wide range of specialized courses is offered across all competences, including those corresponding to "Information Media and Interaction", such as real-world oriented systems and interaction design. These include advanced subjects such as Advanced Technologies and Media Expression, Music and Acoustic Information Processing, Automata and Formal Languages, Advanced Computer Graphics, Software Architecture, Information Visualization, and Perceptual Psychology. Together with long-term experimental courses in which students pursue a single theme over an extended period, they develop not only specialized expertise but also human skills and practical abilities. In the fourth-year graduation research, students synthesize the specialized knowledge and technical skills they have acquired, ultimately developing the practical ability to generate innovative technologies and scientific theories within the field of Information Media Science.

Teaching and Learning Methods	The curriculum enables students to select courses in media sciences after mastering the fundamental skills, in accordance with their individual study plans and motivations. This enables diverse study paths suited to each student's interests and aptitudes, and prepares them for various career options that meet society's needs. In light of the current state and future prospects of the rapidly evolving networked information society, we also draw on guidance from industry experts who are invited to share their practical experiences through teaching. Through these efforts, the curriculum is continuously reviewed and revised to align with the demands of the times. In addition to courses in information literacy, data science, and programming, we offer a rich set of practice-oriented subjects, including special seminars where students set their own themes to cultivate planning and execution skills. Furthermore, we offer practical and experimental courses designed to master technologies essential in real-world contexts, including subjects related to the Campus OJT Program.

Structure of curriculum and competences to be developed

1st year	2nd year	3rd year	4th year
Foundation Subjects for Major Mathematics and programming courses ▼ Acquire basic knowledge in the field of information science and technology.	**Foundation Subjects for Major** Network Media Technology Contents Technology, Computer Science Mathematics Human science ▼ By broadening the basic knowledge and skills obtained in the first year, acquire solid technical and applied skills in information science, as well as a broad perspective on humans, culture and society.	**Major Subjects (Compulsory)** Information Media Laboratory ▼ Acquire practical skills.	**Major Subjects (Compulsory)** Graduation Research ▼ Comprehensive training in specialized knowledge, technical skills, etc. in information and media sciences
Introductory courses on content processing ▼ Develop artistic background, too.			
		Major Subjects (Electives) Internet and communication technologies Content storage and distribution technologies Interaction technologies Computer Science Content processing and utilization technologies Basic technologies for content development ▼ Acquire broad knowledge and advanced expertise in the two areas of network media technology and content technology	
General Foundation Subjects Multidisciplinary Subjects, Foreign Languages, Physical Education, Specific Foundation Subjects, etc. ▼ Acquire ample cultural knowledge, broad perspective, and sense of ethics.			

Admission Policy

Desired Student Profile	Candidates should have both scientific and technical skills, as well as a well-rounded sensitivity to culture and art. Moreover, they should have a strong interest and motivation to learn a variety of technologies and academic disciplines in the network information society, and aim to contribute creatively to the society.

Student Evaluation and Selection	Individual Achievement Test First Round	In addition to a broad foundation of basic academic skills, we conduct a comprehensive evaluation of candidates' proficiency in mathematics and foreign languages, as well as their proactive attitude toward collaborative learning with diverse individuals.
	Entrance Examination by School Recommendation	We conduct a comprehensive evaluation based on the candidate's academic performance in high school, basic academic skills, engagement in extracurricular activities, and their motivation and sense of purpose toward learning the science and technology of information media, along with their abilities in self-expression, self-analysis, and communication.
	Entrance Examination by Admissions Center	We comprehensively evaluate candidates' creativity and motivation to independently set research topics in the science and technology supporting content and network media, their problem-solving skills to analyze issues precisely and solve them creatively, and their ability to logically explain the process and conclusions.
	Entrance Examination for International Science Olympiad Participants	Targeting those who achieved A rank in the final round of the Japan Olympiad in Informatics, we evaluate their motivation to learn with clear goals and their ability to study in a planned manner.
	Entrance Examination for IB Students	We conduct a comprehensive evaluation of candidates' motivation to learn the science and technology of information media, logical thinking ability, comprehension skills, and basic academic skills such as mathematics required for study in this program, as well as their communication skills in Japanese.
	Entrance Examination for Foreign School Students	Type 1：For long-term students and international students Type 2：For short-term students and returnees
	Transfer examination	We select candidates who demonstrate a high level of motivation to study the science and technology of information media, and who possess academic abilities equivalent to the completion of the second year of university in English (based on TOEFL/TOEIC scores), mathematics, and basic information science necessary for learning specialized subjects.

Learning Support Framework

Academic Support	– The course instructors adjust the pace of the class according to the students' level of understanding, promote active learning-oriented classes, and provide individual support through office hours. – The class advisors work in cooperation with the course instructors to provide careful support to students regarding their classes. We check students whose course completion status is particularly unsatisfactory each semester and provide learning guidance through their class advisors. – For the convenience of students' learning activities such as review, we promote the distribution of digital course materials. – We provide presentation instruction in the course 'First Year Seminar'. – We support the acquisition of research skills in the courses 'Special Project on Information Media I' and 'Special Project on Information Media II'.
Opportunities for Peer Interaction	– Course instructors provide opportunities for group learning among students while keeping in mind of the course content. – Group projects are conducted in parts of the courses 'Information Media Laboratory A' and 'Information Media Laboratory B'. – In parts of the courses 'English for Specialized Subjects A' and 'English for Specialized Subjects B', students give presentations and engage in discussions with each other. – In parts of the courses 'Special Project on Information Media I' and 'Special Project on Information Media II', we encourage presentations and discussions among students.
Opportunities for Student–Faculty Interaction	– Course instructors provide opportunities for student-instructor interaction during office hours. – In parts of the courses 'Special Project on Information Media I' and 'Special Project on Information Media II,' course instructors participate in student presentations and discussions, providing guidance and facilitation. – We conduct class liaison meetings as an opportunity for information exchange and interaction between students and faculty members.

Approaches to Assuring and Enhancing Educational Quality

- Through the Educational Management Committee of School of Informatics, we conduct reviews based on the results of learning outcomes assessments. We share actions related to educational management among colleges within the School of Informatics and are working to improve education.
- We establish guidelines for rigorous grading and work on reasonable credit awarding.
- Each semester, the Educational Management Committee conducts the college's own class evaluation (with open-end questions), which includes university-wide questionnaires. The Educational Management Committee analyzes the answers and feedback the results to the class instructor for effective class improvement. Additionally, survey results regarding classes conducted under student leadership, such as by class representatives through the meeting with the students, are shared at the Education Council. These enable effective teaching improvements.

Measures to improve educational abilities