SDM
System Design and Management

Graduate School of System Design and Management, Keio University

MESSAGE

We want to attract talented people who aim to become the next generation of leaders, and as “cross-disciplinary experts,” realize a new society and integrate a diverse group of specialists.

Seiko Shirasaka

Dean
Graduate School of System Design and Management

Establish feasible objectives with social value through the ability to ask the right questions

In today’s society, where diverse values exist side-by-side and different things are all interconnected and interact with each other, the whole can no longer be viewed as static. In fact, technology is evolving faster and faster, the intensity of various changes in the social environment is becoming more pronounced, and unexpected developments are happening one after another. In this kind of situation, it can be difficult to decide on what to aim for in the first place. If it were merely a matter of setting our objectives by looking at precedents and extrapolating from that alone, the task would be simple. However, technological advances have made it possible to do things that were previously impossible. Furthermore, changes in the social environment have made it necessary to set our aims differently from before. Thus, the next generation of leaders needs the ability to set the appropriate objectives to aim for. In other words, they need the ability to ask the right questions. However, without a bird’s eye view of the whole picture, the objectives we aim for will only be partially optimal. Likewise, setting unfeasible objectives is meaningless if they cannot be achieved. Even if such objectives are feasible, they will not be truly valuable to society from the standpoint of the provider. In other words, the ability to design by combining social value and realization mechanisms together is necessary for setting objectives with social value, taking into consideration the mechanisms for their realization.

Design and implement concepts to realize objectives

In order to realize the ideal society of the future, it is necessary to take a bird’s eye view of society, set our eyes on the vision of the future, and define the mechanisms needed to realize it. At this time, it is not possible to think of businesses and services, etc. — that are responsible for providing value — and the technology, systems, and organizations, etc. — that are the means to realize that value — as separate and independent things. We need to manage these in an integrated manner to ensure optimal design. It is precisely through the integration of multiple specialties that we will be able to realize a society that was previously unattainable. And in order to actualize this mechanism in society, it is necessary to build consensus with various stakeholders and to design and implement a path to the vision of the future. In doing so, it may be suitable for some to proceed by trying things they have not experienced before, while for others it may be appropriate to advance in a well-thought-out, steady manner. In other words, designing also involves combining the path to real-world implementation.

Responding to change

In today’s world, there are additional factors we have to take into account. COVID-19, conflicts in various parts of the world, as well as natural disasters. Unforeseen events continue to occur. The era of VUCA, it seems, has arrived in earnest. VUCA is an acronym that stands for Volatility, Uncertainty, Complexity, and Ambiguity. The era of VUCA refers to a time when the future is not an extrapolation of the present and predicting the future is difficult. Furthermore, the world is moving toward Society 5.0, a society which provides new value by linking previously isolated things to a network. By being connected in a network, changes in the external environment, which would not have affected what had previously been isolated, would now have an impact due to the network. In other words, we are now more susceptible to changes in the external environment than ever before. In this era, the ability to ask the right questions that are not an extrapolation of the present is undoubtedly necessary, but it is also important to design mechanisms for realizing objectives that can adapt to changes themselves. In order to respond to change, it is necessary to identify changes in the external environment that affect the mechanism and to modify the design of the mechanism when change occurs. In addition to that, it is also important that the design be easily adaptable to change. In other words, we will capitalize on change by being ready to respond to it.

Education and research leveraging diversity

Since its establishment in 2008, Keio’s SDM has been active in education and research to integrate “objective setting,” “mechanism design,” and “implementation management.” To flip the popular saying on its head, it is important to “envisage the forest by looking at the trees.” To this end, we aim to collaborate with a diverse group of people in order to understand matters from multiple perspectives and to utilize and integrate opinions from diverse viewpoints. This is the “cross-disciplinary expertise” that enables us to leverage our diversity.
In order to cross multiple academic fields utilizing this cross-disciplinary expertise, SDM provides a unique education consisting of knowledge in systems, design, and management, and actively conducts cross-disciplinary research. People from a broad range of ages come from all over the world to study together with a diverse group of students, researchers, and faculty members, all with different specialties, to discuss how to create a better society. In the process, students may be exposed to opinions that differ from their own previously held notions. Those who enjoy updating their knowledge from such experiences may be a good fit for SDM. We look forward to welcoming all who are interested in learning and researching together with a diverse group of people with the aim of realizing a better society and acquiring this cross-disciplinary expertise.

INTRODUCTION

Learn System Design and Management in English While Being in Japan

——A Gateway to New Perspectives and Distinct Careers

Broaden Your Horizons with World-Class, Cutting-Edge Knowledge

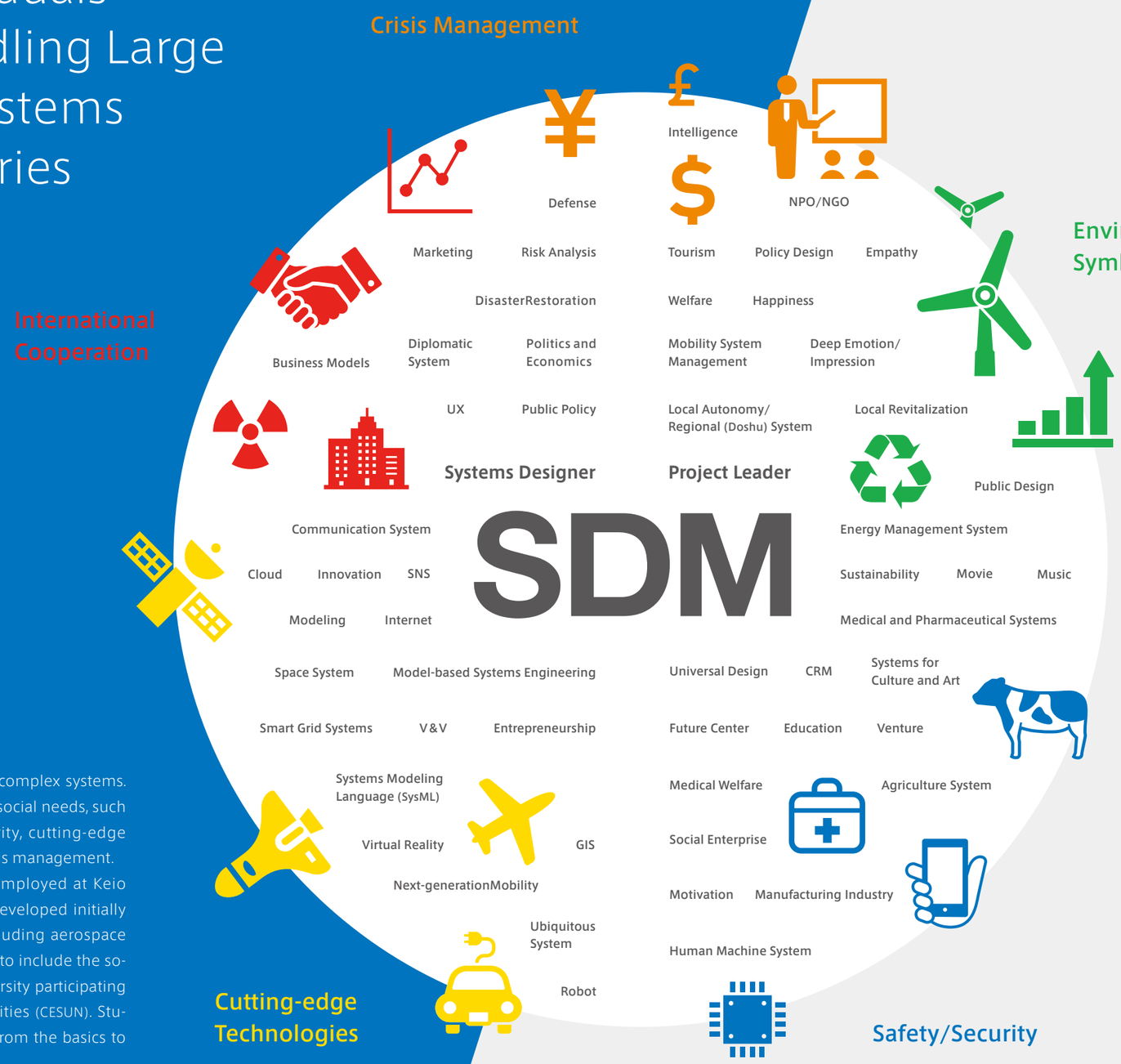
The Graduate School of System Design and Management at Keio University (Keio SDM) pursues problem solving with a "systems" approach by capitalizing on a broad range of perspectives from the natural sciences as well as from the humanities and social sciences. Mid way between downtown Tokyo and Yokohama close to both by train, Keio SDM enables students to learn the world's leading systems engineering and design thinking in both Japanese and English.
Keio SDM has a diverse student population made up of various backgrounds, age-groups, and nationalities. Not all students have a background in natural sciences and engineering; and many are professionals who are working in Japanese enterprises and government organizations. At Keio SDM students have ample opportunities to broaden their views by studying alongside these individuals as they encounter diverse values and ways of thinking.

About Keio University

Keio University is among the most prestigious private universities in Japan. It was founded in 1858 by Yukichi Fukuzawa, a leader of modern Japan who is also known as the man portrayed on Japan's 10,000-yen note. Many Keio alumni are successfully leading in a wide range of fields, including business, technologies, politics, and education. Being a Keio graduate is perceived as prestigious in Japan.

CONCEPT

Nurturing Individuals Capable of Handling Large and Complex Systems beyond Boundaries



Learn Systems Engineering and Design Thinking

Keio SDM deals with a multiplicity of large and complex systems. As we seek solutions, we make sure to consider social needs, such as environmental symbiosis, safety and security, cutting-edge technologies, international cooperation, and crisis management.
Two pillars of problem solving methods are employed at Keio SDM. One is systems engineering, which was developed initially for the purpose of desiging large systems, including aerospace and military systems. Now it has been extended to include the social sphere. Keio SDM is the only Japanese university participating in the Council of Engineering Systems Universities (CESUN). Students can learn all about systems engineering from the basics to the cutting-edge at Keio SDM.

The second pillar is known as design thinking. It is a development method which uses techniques, such as fieldwork, brainstorming, and workshops, to generate ideas. Its aim is innovation through drawing out the creativity of participants.
With systems engineering alone, it is difficult to accommodate different perspectives of multiple stakeholders for the purpose of innovation. Design thinking, on the other hand, tends to be weak at taking a systematic approach to the shaping of ideas. Keio SDM has successfully created a development method which combines the two in a complimentary way. At Keio SDM students learn how to create an optimal fusion of systems engineering and design thinking. This equips them with the capability of tackling large and complex systems.

Developing a Wealth of Skills

Keio SDM nurtures future systems designers and project managers who are capable of designing and managing multiple systems. One needs to have a diverse set of skills in order to coordinate with multiple stakeholders for the purpose of creating systems. Keio SDM offers a range of programs to produce individuals with a wide spectrum of skills and abilities.

POLICY

Student Admissions Policy

For the master's programs, we admit both persons aspiring to conduct research and put into practice the design and engineering of innovative technological systems that will contribute to resolving many of the large-scale and complex issues of the modern day, and those aspiring to research on and implement the leadership and management required to propose solutions to issues in the diverse social systems of today and guide these projects to success. In order to foster personnel befitting of these degrees, we admit people from many walks of life, including persons advancing to graduate school directly after completing their bachelor degrees and those with hands-on experience (early career/seasoned professionals) at organizations in the public, private, and other sectors. Screenings are conducted to comprehensively assess whether candidates have sufficient aptitude, skillsets, and desire to actively study alongside students from diverse backgrounds and put what they learn to practical use in the real world.

For the doctoral programs, we admit both persons aspiring to support various fields as researchers and social practitioners through advanced academic research on the design and engineering of innovative technological systems that will contribute to resolving many of the large-scale and complex issues of the modern day, and those aspiring to contribute to various fields as researchers and social practitioners through proposing solutions to issues in the diverse social systems of today and advanced academic research on the leadership and management to guide these projects to success. In order to foster personnel befitting of these degrees, we admit people from a wide range of spheres across generations, including persons with hands-on experience in the public and private sectors (early career/seasoned professionals) as well as students who have completed a master's degree program. Screenings are conducted to comprehensively assess whether candidates possess academic and research capabilities equivalent to those required for the master's program, the initiative to plan and conduct research, and sufficient aptitude, skillsets, and desire to put what they learn to practical use in society as specialists, in addition to whether they have made the preparations necessary to pursue their research after admission.

Curriculum Policy

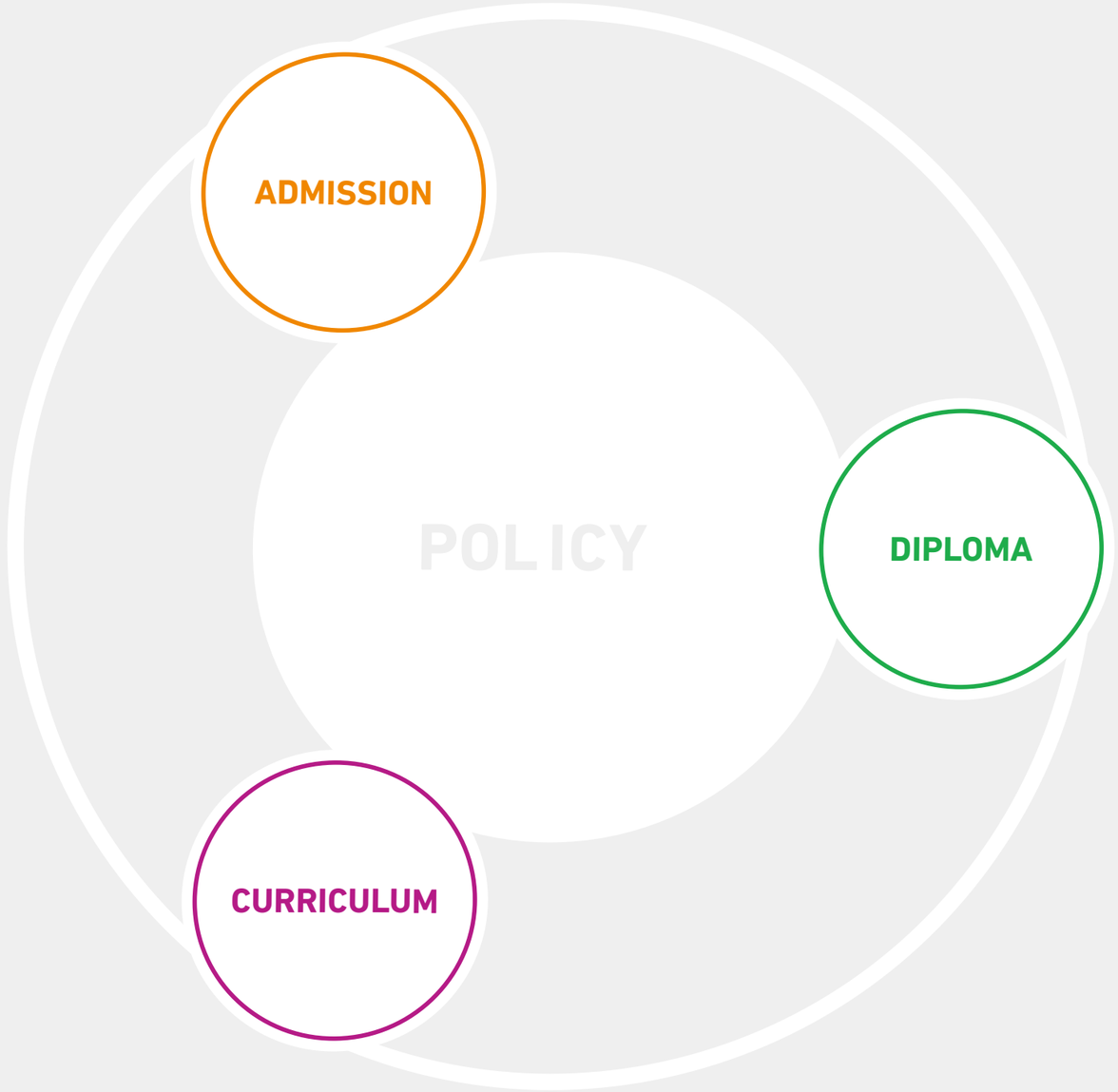
On the master's program, students will master comprehensive management skills including strategic system engineering methods and communication skills in core subjects, and work on a "design project" course embracing jitsugaku or practical learning. In addition, we offer a variety of courses for students to acquire a broader global perspective.

For the master's program in System Engineering, students primarily engage in research over a two-year period (standard) in fields related to the design of technological systems, presenting their findings, etc., in Japan and internationally and compiling these into a master's thesis.

For the master's program in System Design and Management, students primarily engage in research over a two-year period (standard) in fields related to addressing issues in social systems, which they then compile as a master's thesis.

On the doctoral programs, it is possible for students to take courses taught as part of the master's programs in order to study required subjects (especially core subjects, etc.). For the doctoral program in System Engineering, students primarily engage in research over a three-year period (standard) in fields related to the design of technological systems, on which they compile a doctoral dissertation while being positively evaluated by external specialists through presenting their findings in Japan and internationally. For the doctoral program in System Design and Management, students primarily engage in research over a three-year period (standard) in fields related to solving problems in social systems, on which they compile a doctoral dissertation while being positively evaluated by external specialists through presenting their findings in Japan and internationally.

In all of the degree programs, students can take lectures given by renowned professors from overseas while still in Japan through SDM's collaborations with MIT, Montclair State University, TU Delft, INSA, Politecnico di Milano, and others. In addition, we actively implement student exchange programs with all these universities. Due to the wide range of issues tackled by SDM, students conduct research while eliciting guidance from various related parties, which they compile into a thesis or dissertation.



Diploma Policy

Both the master's and doctorate programs have degrees in "System Engineering" and "System Design and Management."

Completion of studies for the Master of System Engineering means that students learn the core subjects and project subjects, and after studying other courses to acquire a broader global perspective, compile their research in fields primarily related to the design of technological systems into a master's thesis. Completion of studies for the Master of System Design and Management means that students learn the core subjects and project subjects, and after studying other courses to acquire a broader global perspective, compile their research in fields primarily related to solving problems in social systems into a master's thesis.

Completion of studies for the Doctor of System Engineering means that students have academic papers in fields primarily related to the design of technological systems positively evaluated by specialists, or have a system they created positively evaluated by specialists, compiling the outcomes of which into a doctoral dissertation. Completion of studies for the Doctor of System Design and Management means that students have academic papers in fields primarily related to solving problems in social systems positively evaluated by specialists, or have a system they created positively evaluated by specialists, compiling the outcomes of which into a doctoral dissertation.

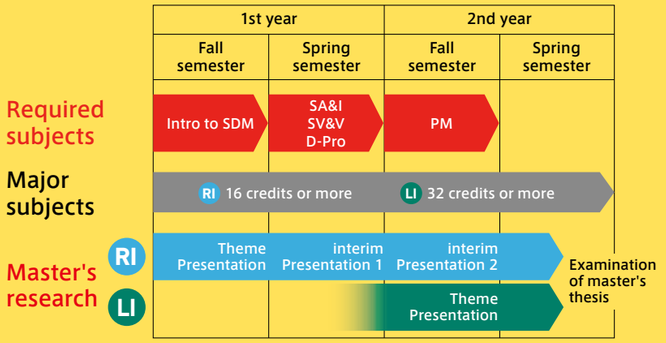
CURRICULUM

Knowledge and Experience
—Both Essential for Developing Capability

Our curriculum aims to build collective strengths by combining knowledge with experience. Students first gain knowledge from lectures on systems engineering, design thinking, management capability, and specialized subjects. They are then invited to work on real-life projects and explore practical solutions. With our approach of combining knowledge with experience, students grow into integrated professionals who are capable of building and managing systems with precision.

Classes Offered in the Master's Course

Master's Course Schedule (Fall Admission)



Students in the master course learn the basics of systems engineering through the mandatory core subjects. Additionally they take specialized subjects covering specific fields and recommended advanced subjects covering multidisciplinary topics according to their interests. By creatively combining these subjects, students can broaden their knowledge towards a wide spectrum of subjects.

Classes are offered in Japanese and/or English. It is possible to complete the master course by selecting only classes in English. Core subjects are offered both in Japanese and English; Japanese classes normally begin in April while English classes begin in September.

It takes practical experience to effectively design and manage real-world systems. Students in the first year master course learn design thinking and work on real-life issues in the Design Project. In parallel, they proceed to practical research in special research subjects; and the results are compiled in their theses. At Keio SDM we set high standards for masters research. The doctoral program offers more specialized research opportunities. Doctoral students can take masters classes according to their interests. Quite a few of those theses end up presenting at international conferences.

CURRICULUM

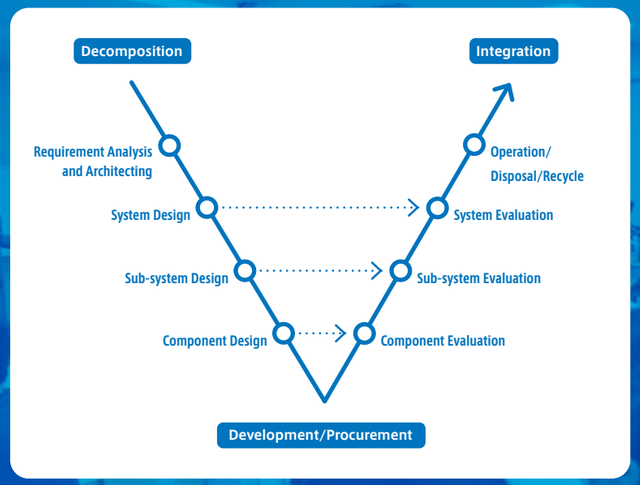
Students in the master course first learn the basics of systems engineering and other fundamental skills necessary to deal with systems. Building on this, they acquire knowledge about systems of various fields in specialized subjects. Additionally they learn design thinking in the Design Project.

Linking Knowledge

Students first learn the V-model, an important concept of systems engineering.
The V-model structures systems by decomposing requirements and integrating parts and their validation. This model can be used as a broad framework to capture how the entire process relates to each specific part. One can apply the model to system development of various fields, including those which are scientific and technical, social, and human.

Building on basic knowledge of the V-model, students take a variety of specialized subjects. Students can learn in a systematic and structured manner by using the model as a common framework, linking a broad spectrum of knowledge.

At Keio SDM we use the V-model to decompose, integrate, design, and evaluate by precisely defining the diverse requirements of the stakeholders, by sharing information, and by creating complete pictures of systems.



Intensive Lectures in English

Keio SDM's strength is not only that the curriculum can be completed solely in English. A series of intensive lectures are offered in English by the world's leading professionals and researchers from different fields.
This international learning environment as such makes Keio SDM an ideal environment for the growth of globally-minded professionals who are capable of accommodating different cultural perspectives.

List of Past Intensive Lectures (with titles as they were at the time)

"System Architecture and Integration"
Prof. Rashmi Jain (National University of Singapore)

"Supply Chain Management and Business Games"
Prof. Paul Schoensleben (ETH, Switzerland)

"Collective Dynamics of Firms"
Prof. Dr. Frank Schweitzer (ETH, Switzerland)

"Technical Entrepreneurship & Management"
Prof. Duncan Moore (University of Rochester, US)

"Risk Management"
Prof. Gilles Motet (INSA, France)

"Space Applications"
Prof. Dipl.-Ing. Heinz Stoewer (President Space Associates GmbH, Germany)

"Stanford Center for Design Research Workshops"
Dr. Larry Leifer (Stanford University, US)

"Object-Process Methodology (OPM) with Application to Systems Engineering"
Prof. Dov Dori (MIT, US)

From Basics to Application ——the Design Project

The Design Project aims to propose innovative systems by using the system design and management method developed collectively by Keio University, MIT, Stanford University, Delft University of Technology, and the University of Adelaide. In the Design Project students put systems engineering into practice while learning about design thinking.
In the Design Project students begin with the basics and then move on to practical learning. After taking a number of lectures taught by guest lecturers from partner universities overseas, students work in groups to work on themes proposed by various organizations. The proposers often include leading Japanese companies; and international students have a great opportunity to get acquainted with the unique characteristics, strengths, and cultures of Japanese enterprises.

Examples of Solutions Derived by Students with the Theme "Safety and Security"

"Building New Brand Image of Safety and Security Using Positive Cycle Business Model"
Proposer company: Adidas

"Portable Multi Energy Backpack System for Refrigerating Vaccines"
Proposer company: Kokusai Kogyo group Infrastructure Innovation Institute, Inc.

"Safe and Secure Solar Power Generation in Japan - Dual Mode Solar Panel System: Proof of Concept"
Proposer company: Delft University of Technology

"Safety Premium Point System"
Proposer company: Suzuki Motor Corporation

"Design of Bicycle Simulator to Reduce the Risks of Traffic Accidents"
Proposer company: Toshiba System Technology

CURRICULUM

Keio SDM emphasize the importance of hands-on experience.
Students are encouraged not only to gain textbook knowledge about systems
but also to experience real-life situations, to clearly articulate issues,
and to come up with innovative, feasible solutions.
It is when one is actually seeking solutions to complex systems that most discoveries and realizations come.
We believe in experiential learning, that one learns most by doing.

Learning by Doing
—Experiential Learning

Insight into the "On-Site" Realities of Japan

Keio SDM has strong ties with private companies. This means our students have the privilege to observe "on-site" scenes of Japanese companies through various opportunities.
For example, we arrange visits to distinctive factories as a part of the curriculum. In the Design Project students have the opportunity to visit the workplaces of proposing companies and work collaboratively with their staff members. Furthermore, Keio SDM has a great number of on-going joint research projects with private companies, facilitating students to have close and frequent communication with the companies. Many faculty members of Keio SDM come from private firms; and some internship opportunities can be facilitated for our students by virtue of their strong connections with the companies.
Keio SDM offers its students valuable opportunities to engage with Japanese companies, providing opportunities to gain insight into the secret of their strength and the "on-site" realities.

Laboratory Participation and Thesis Writing
The Special Research Subject

The core of the master's program is the special research subjects "System Design and Management Research" and "Project Design and Management Research".

Students will engage in research for two years (standard) under the guidance of their academic advisor while participating in a laboratory. Research does not stop at mere analysis. It is required to design solutions that will change the world for the better as a system, implement them in society, and evaluate them.

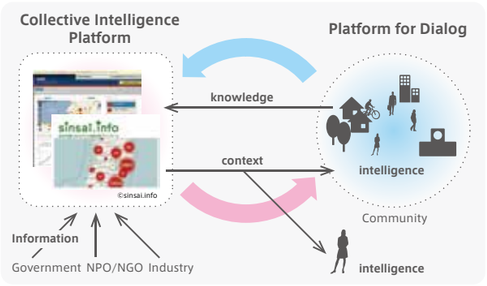
After compiling the results of the research as a master's thesis, the degree will be certified after a presentation and question and answer session at the master's thesis examination. It is expected to be the culmination of the knowledge and experience acquired at SDM.

Study Case

Portfolio Optimization for Environmentally-Conscious Automobiles

Many environmentally-conscious automobiles are being developed and sold, such as the ones based on electric, fuel cell, natural gas, and gasoline-electric hybrid technologies. We use the system approach (simulation and system optimization) to study portfolio maximization—analyzing which type of automobile should be brought to the mainstream given the various constraints, such as those related to environment, energy, resources, aging population, and development in emerging nations.

Resilient Community Design: Knowledge Creation for Safety and Security



Communication Design Process: Knowledge Creation for Safety and Security

Organizational Management Establishing Culture and Safety Consciousness within Companies

We conduct research into ways in which companies can develop a positive culture and work atmosphere in which staff members feel motivated and rewarded. Our research also asks questions concerning how to establish excellent companies with a high level of safety consciousness, risk management, and profitability. We study companies' strategies that enable effective management—creative ways to motivate employees while nurturing teamwork and good communication within an organization.

Disaster-Prevention Message Delivery Service

At Keio SDM we use smart systems, such as IT systems and space systems, in order to create socio-technical services and their processes. In search for resilient community design process, we do research on a disaster-prevention message delivery service using a satellite and GPS receivers. We study a distributed autonomous cooperative community design process that is resilient and based on the fusion of two platforms: dialogue and IT.

FACULTY

Diverse Careers and Fields of Research Create New Challenges

The backgrounds of Keio SDM's faculty vary from industrial experience to active careers in the international arena. Their career paths and research areas are so diverse that new research ideas and activities are being generated every day at Keio SDM through borderless intellectual interactions.

SHIRASAKA, Seiko　Dean, Professor

Engaged in space development at Mitsubishi Electric Corporation for 15 years. where he has been in his current position since 2010. In addition to research, he also conducts various activities necessary for the social implementation of research results.

Creating the future through cross-disciplinary expertise that leverages diversity

Research topics

We will conduct research that contributes to the creation of the future for more people through the construction of methodologies that integrate academic and field knowledge. In particular, we will focus on research related to the mechanisms necessary to convert the state-of-the-art technology into value for society.

Messages

We look forward to working with you to create the future through methodologies that leverage diversity.

INOKUMA, Hiroko　Professor

EY Ernst & Young ShinNihon LLC, Associate Professor at the Graduate School of Economics and Management (Accounting School), Tohoku University, and Professor at the School of Liberal Arts and Sciences, Musashi University (with the alignment of the Parallel Degree Programme Education Centre University of London, LSE). Certified Public Accountant (Japan).

Redesigning economic and social systems to create a sustainable society

Research topics

•Redefining and restructuring capitalism, reviewing the workings of the economic system and its social implementation.
•Institutional design to accommodate cross-border movements of funds and business activities.
•IT governance and third-party assurance, audit and assurance for autonomous decentralized platforms.

Messages

Build your own research area in an environment of diverse students and highly individualistic lecturers.

IOKI, Makoto　Associate Professor

Worked in satellite design and space business strategy planning at Mitsubishi Electric Corporation. Later, at the Japan Space Systems, he was in charge of international cooperation and the promotion of the overseas expansion of the space industry.

Design the future together with a bird's eye view of the world

Research topics

We will guide you to develop the ability to see things from a bird's eye view and from multiple perspectives, and to acquire skills through practice. We will emphasize the importance of "learning how to learn," and foster the ability to quickly absorb knowledge in unknown fields and apply it to solving problems. Research themes will be set individually, with an emphasis on each student's awareness of issues.

Messages

Together, we will discover the as-yet-unidentified challenges of the real world and do our best to support your growth towards solving them!

KOHTAKE, Naohiko　Professor

After contributing to research and development of H-IIA rocket at JAXA and collaborating internationally with NASA and European Space Agency, he has held his current position since 2009. He has served as Principal of Keio Yokohama Elementary School and is currently President of Space Service Innovation Laboratory Inc. He is PMP certified by PMI and holds a Ph.D. in Media and Governance.

Breaking boundaries across domains, regions, and generations to make a global impact through education, research, and business

Research topics

Research is promoted on system design and management studies that utilize diverse data and AI to explore future possibilities and risks in a wide range of fields, including space development, education, sports, livestock production, agriculture, urban development, and disaster prevention, both in Japan and internationally

Messages

Let's tackle global challenges from both a broad and precise perspective, embracing a 'Fail Fast' approach with a mindset that balances learning and teaching, while valuing hands-on experience in the field.

NIITSUMA, Masahiro　Associate Professor

He holds an M.S. in Open and Environmental Sciences from the Graduate School of Science and Technology, Keio University, and a Ph.D. from Queen's University Belfast. After serving as an assistant professor at the Faculty of Information Science and Technology, Ritsumeikan University, from 2013, he became a full-time lecturer at Keio SDM in 2021 and has been an associate professor since 2023.

Exploring true "living" through a holistic approach distinct from conventional methods

Research topics

His main interest lies in artificial intelligence, particularly its application to analyzing J.S. Bach's handwriting and the evolution of his works. To address perspectives often overlooked by conventional natural science, he is working to understand embodied knowledge rooted in traditional Asian wisdom, such as Buddhism, and to model it using a systems approach. His aim is to incorporate the results of these efforts into definitions of social concepts and, ultimately, to realize a truly harmonized world.

Messages

In an era where technology is displacing our jobs, why not revisit and explore the meaning of our existence?

NISHIMURA, Hidekazu　Professor

Moved from research and education in dynamic systems control to the world of model-based systems engineering. Design systems of businesses, services and products

Build a future with everyone thinking of authentic

Research topics

What should be the relationship between society and technology where people carry out various activities? Think through the interaction among people, society and technology by using UAF/ SysML in order to lead to solutions to problems in the natural environment, management, finance, logistics, transport environment, product development, etc.

Messages

We live in an era of great change. Why not take a step forward using the model to create a better future?

OGI, Tetsuro　Professor

He joined Mitsubishi Research Institute in 1986 and completed his doctorate at the University of Tokyo in 1994. After working as an associate professor at the University of Tokyo in 1996 and as an associate professor at the Tsukuba University in 2004, he was appointed to his current position in 2008.

Future societies will not be predicted, but created by us

Research topics

Research on the design of next-generation information, communication and media systems is conducted from the perspective of human interfaces, VR/AR, etc.
Research is conducted from a wide range of perspectives, from technological research on immersive displays, avatar robots, etc., to social applications such as health lifelogging and community revitalisation.

Messages

To lead today's increasingly complex society, we nurture multi-players who can think about things from many different perspectives.

SUIMON, Yoshiyuki　Associate Professor

After serving as a Senior Economist and Head of the Data Science Department at Nomura Securities, I joined Keio SDM. MBA, University of Michigan; Ph.D. in Engineering, University of Tokyo.

Unraveling socioeconomic systems through mathematical techniques and data science

Research topics

Focuses on mathematical and data-driven analyses of human and corporate behavior in relation to economic activities and social phenomena. In addition to quantitative approaches, also emphasizes qualitative methods such as literature reviews, discussions, and interviews.

Messages

Let's explore and uncover the forefront of dynamic systems in society, economy, and finance together!

TOMA, Tetsuya　Professor

Master in Applied Chemistry, Graduate School of Science and Technology, Keio University, Japan; worked for 20 years as a Product Development Specialist at 3M companies in both Japan and the US before joining Keio University. PhD in SDM, PMP; visiting researcher at MIT 2019-20.

Challenging of creating a bright future in cross-disciplinary teams

Research topics

Research on social issues such as information and communication, healthcare, education, regional revitalization, organization, communication and project management, using an interdisciplinary approach that links technology and people. Guide students to make them feel that they want to do more research upon completion of their thesis.

Messages

Enjoy valuable research that brings together knowledge from multiple disciplines to solve problems and aims at social significance and innovation.

YAKOH, Takahiro　Professor

Prior to his current position, he worked for 25 years at the Faculty of Science and Technology, Keio University. His expertise includes code theory, image processing, data analysis, artificial intelligence, and digital transformation. Ph.D. in Engineering

The challenge of developing intelligent systems to solve social problems

Research topics

AI-based 3D model generation, knowledge sharing and transfer using generative AI, healthcare using generative AI, adverse event detection using prescription data analysis, data augmentation methods for structured information, DX of logistics, AI transformation of education

Messages

Learn about rapidly evolving digital technologies, how to identify their trustworthiness, and develop the skills to use them effectively.

YAMAGATA, Yoshiki　Professor

Graduated from the University of Tokyo with a BA in Liberal Arts and spent 30 years working on climate change research at the National Institute for Environmental Studies, where she also served as IPCC representative author and other positions. Currently teaches and researches on the design of sustainable urban systems.

Co-creation of a future society in which the environment and health are in a virtuous circle

Research topics

Climate change mitigation and adaptation in cities; analysis and visualisation of urban information to analyse big data; development of digital twin urban and regional sustainability simulation methods.

Messages

Co-create the design of future urban systems and contribute to building a sustainable society.

VOICE FROM ALUMNI

I like the cross-cutting approach of Keio SDM

Kamila Romejko

Completed Doctoral Degree in September 2017
Completed Master's Degree in September 2014

I chose Keio SDM because I was interested in the automobile industry and looking for a Japanese graduate school which offers a relevant course in English.
I am satisfied with the number of classes that Keio SDM offers in English. I also like its concept of learning more than engineering. At Keio SDM we cover a wide range of subjects, such as design, business, economics, and policies. The curriculum is designed in such a way that we get our hands on real projects after going through theories. I find this to be highly effective. I feel encouraged to be creative as students here are eager to work together and take pleasure in meeting new cultures and individuals of different backgrounds.
I spend weekends doing a variety of things, including going to parties, attending concerts, and visiting design exhibitions. Something exciting is always happening in Tokyo; it's never a bore. I feel that Tokyo has countless possibilities to offer.

Global Insights, Local Impact: Leveraging SDM Knowledge in a Cross-Cultural Workplace

Michelle Eng

Completed Master's Degree in September 2024

Upon completing the SDM program, I realized that true innovation and impactful problem-solving are born from the convergence of diverse perspectives. Having spent significant time in China, Japan, and Malaysia, I initially believed I had a broad cultural understanding. However, at SDM, I encountered professionals and experts from various industries, age groups, and cultural backgrounds who pushed me to challenge my assumptions. Their unique ways of thinking amplified my own experiences and showed me the importance of cultivating a subjective, yet empathetic viewpoint—especially when designing solutions for complex, real-world problems. SDM approach encouraged me to not only consider logical structures (the "system") but also the human experiences and emotional nuances (the "design" aspect) that often spark genuine innovation.
I have been a Talent Sourcing Specialist at IBM (global team) for only four months. From my very first month, I actively participated in a global design workshop with stakeholders from the US, Singapore, and China. The topic was to be tackled cross-cultural sourcing challenges in my team (Japan team) —unclear recruiter–manager communication, and a misaligned Japan strategy. By mapping stakeholders' pains, we co-created solutions, such as real-time market insights and tailored collaboration protocols for Japan's unique labor environment. SDM's methodologies—design thinking, systems perspective, and collaboration—proved invaluable in aligning global management with on-the-ground realities and boosting our competitiveness in the Japanese market.

Hamad El Gibreen

Completed Master's Degree in September 2017

SDM has radically changed the way my brain works to deal with daily challenges.

I stumbled upon Keio SDM a year after completing my undergraduate degree. It offered the potential for unique, interconnected, holistic knowledge and real-world application. To get the most out of the program, I decided to gain more work experience in the transportation sector before enrolling.
To my amazement, SDM has not only exposed me to a wide range of knowledge (from political economy to entrepreneurship), but it has also fundamentally changed who I am as a person and how my brain works and processes daily challenges.
To embrace the SDM experience is to reset your brain to its original systemic ability to see the whole as well as the part. You will learn the art of moving through multiple levels of abstraction to see how everything is integrated from multiple perspectives. Best of all, SDM will bring back the childlike nature of those who embrace it, unleashing the human inner playfulness as an imperative action to enable innovation.
Nearly a decade later, I still hold the results of SDM close to my heart and use them every day. From developing strategy in my organization to addressing technical challenges and safety incidents through systems and design knowledge, the insights I gained from SDM professors, colleagues, and friends, as well as my experience in Japan, have proven invaluable in better understanding myself and others' perspectives.
Truly, investing in Keio SDM is investing in transforming yourself.

Naomi Simumba

Completed Doctoral Degree in March 2022
Completed Master's Degree in September 2018

International Opportunities Just A Click Away

I did my bachelor's degree in electrical engineering in my home country of Zambia and had heard about the System Design and Management program at MIT when I stumbled upon Keio SDM in an online search. After successfully applying for a Japanese government scholarship, I joined the master's program in September 2016. I am now a Ph.D. student, and both programs have exceeded all of my initial expectations.
At Keio SDM, you put problem-solving skills into practice through research, gaining plenty of hands-on experience along the way. During my master's program, I had to balance coursework with my research in Cambodia, where I had a real difference in people's lives. In the Ph.D. program, on the other hand, I have been identifying unique, unprecedented issues that add value to my field of study. And you can apply to Keio SDM with just the click of a button, no matter where you are in the world. If you're looking for a life-changing experience, I would say there's no better place than Keio SDM.

FAQ

Frequently Asked Questions

Q1

What kind of scholarships do you have?

There are a number of scholarships for international students, such as Keio "Design the Future" Award for International Students, as well as different scholarships provided by Keio University, Japan Student Services Organization (JASSO), the government of Japan, and other private foundations.
All scholarships aim to enable personally and academically outstanding students in need of financial assistance to continue and focus on their studies and research. Most of the scholarships are targeted towards regular students who are on a student visa and studying at their own expense. Please follow the link below for more information regarding scholarships.

http://www.ic.keio.ac.jp/en/life/scholarship/intl_student.html

Q2

I do not speak Japanese. Can I still be admitted?

The answer is yes, you can still be admitted to Keio SDM even if you do not speak Japanese. We give entrance examinations in English; and students can choose to complete the course using only English. Having recognized the importance of internationally competent staff from the very beginning of its establishment, Keio SDM has administrative staff members who can assist in multiple languages. As for the faculty, those who have been educated and/or trained overseas and have sufficient language abilities are assigned to assist international students.
If you wish, you can learn basic Japanese by taking Japanese classes. The university has well-established Japanese language education which began in the 1950s.

Q3

I cannot come to Japan for the entrance examination.

You can send your application documents by post regardless of whether you reside inside or outside of Japan. You will be called for an interview if you pass the document review. There is no need to come to Japan for an interview as we can conduct it online, using technologies such as zoom, for those who reside outside of Japan. Please refer to our examination literature for more details.

Please see below for more information.
www.global.keio.ac.jp/en/

Q4

Can I get help with accommodations?

Keio University has a number of reasonable accommodations for international students. In the vicinity of Hiyoshi Campus, where Keio SDM is located, there are a number of dormitories with easy access to the campus, such as Shimoda Student Village (designed for international students), dormitories for both Japanese and international students. Each dormitory has Japanese residence assistants who facilitate interactions among students and provide daily life support especially for international students.
For international students who wish to rent apartments privately, the university can introduce real-estate agents who can provide services in English. We also have an insurance scheme whereby the university acts as the guarantor.

www.ic.keio.ac.jp/en/life/housing/ryu_boshu.html

Q5

What kind of future careers do international students have after Keio SDM?

International students take on a variety of career paths after Keio SDM; some join Japanese companies; some return to their countries to work; and others go on to further education.
Almost half of our Japanese students are company employees, and many of the faculty members come from private firms. As a student you also have ample opportunities to connect with companies through the Design Project and other research work. Many international students have made use of these opportunities to get jobs with Japanese companies. Because Keio SDM graduates are internationally-minded and capable of navigating in different cultures, many also find opportunities within international enterprises.
Many alumni are now playing active roles in various fields and industries. The network you will encounter by studying at Keio SDM will be an asset to your future business and career. We have seen new business started up through participation in our network.

Q6

Do you have affiliated schools? What kind of arrangements do you have with these schools?

Keio SDM has collaborated with Massachusetts Institute of Technology (U.S.), Stanford University (U.S.), Delft University of Technology (the Netherlands), and the University of Adelaide (Australia) to develop an educational method for design projects. At Keio SDM we are putting this into practice in one of the subjects, the "Design Project", thereby continuing to improve upon the educational method.
We also have international exchange programs. The partner schools include: MIT, Stanford, Delft University of Technology, the University of Adelaide, National Institute of Applied Sciences Toulouse (France), the Politecnico di Milano (Italy), and Purdue University (U.S.). Every year a number of students come from these schools to study at Keio SDM.

ADMISSION

Major Discipline	Admission Quota	Degrees Awarded by SDM
System Design and Management	Master's Program 77 persons	Master's Degree (System Engineering) Master's Degree (System Design and Management)
System Design and Management	Doctoral Program 11 persons	Doctoral Degree (System Engineering) Doctoral Degree (System Design and Management)

Fees for as AY2025

(JPY)

	Registration Fee	Tuition Fee	Student Health Care Mutual Aid Fee	Total
Master's Program	60,000 (30,000)	1,920,000 (960,000)	2,600 (1,350/1,250)	1,982,600 (991,350/991,250)
Doctoral Program	60,000 (30,000)	1,140,000 (570,000)	2,600 (1,350/1,250)	1,202,600 (601,350/601,250)

* Tuition and other fees can be paid in two installments, in the Spring and Fall Semesters.

* Tuition and other fees subject to change as necessary.

*Amounts in ( ) are for separate payments for the spring and fall semester.

Admission Schedule (Master's Program and Doctoral Program)

	Period I	Period II	Period III
Preliminary Entrance Qualification Review	Around early April	Around early September	Around early December
Activation of Web Entry System / Application Period	Around early May- Around late May	Around mid September- Around early October	Around late December- Around mid January
2nd Screening	Around mid June	Around late October	Around early February

NOTE

Graduate School of System Design and Management
Keio University

Collaboration Complex, 4-1-1 Hiyoshi, Kohoku-ku, Yokohama, Kanagawa 223-8526 Japan
E-mail: sdm@info.keio.ac.jp

https://www.sdm.keio.ac.jp/en/

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