

Department of Management Science and Technology

Laboratories	Staff	Research Themes
Value Proposition (Technology Strategy and Intelligence)	Prof. Shuichi Ishida	<p>The areas of research covered include R&D and product development strategies that play a part in companies' business strategy, national science and technology policy and technology intelligence. The research covers many sectors, including large corporations, high-tech start-ups, local SMEs and global companies. National science and technology policies are not limited to Japan but also cover Asia, Oceania, Europe, the United States and other areas of interest to the students. The course provides education and research to acquire knowledge and skills in formulating and implementing technological strategies.</p> <ul style="list-style-type: none"> • R&D strategy • Technology Marketing • Technology Intelligence • National Innovation Systems
Value Proposition (Management System)	Prof. Akira Nagamatsu	<p>The laboratory will promote research on management systems targeting quality improvement of business processes such as business planning, demand forecasting, and R&D, with the aim of realizing corporate growth in the digital environment.</p> <ul style="list-style-type: none"> • Business Process Research • Business planning • Demand forecasting • Research and development management
Value Proposition (Value Creation Engineering)	Prof. Hirokazu Moriya	<p>In our field of specialization, we are interested in research with a primary focus on organizations and strategies such as corporations and universities that place a strong emphasis on value creation. Our research encompasses the strategy of value creation, educational initiatives aimed at fostering it, and the process for facilitating meaningful experiences. We conduct analyses of corporate and organizational social value creation strategies, leveraging financial statements. Additionally, we research innovative value-creation engineering education to cultivate entrepreneurial creativity and explore technology and social innovation for the purpose of creating a better society, all from a global perspective.</p> <ul style="list-style-type: none"> • Social value creation strategies in corporations and other entities. • Engineering education aimed at nurturing social value creation competence and entrepreneurship. • Technology and social innovation for the creation of an enhanced society.

<p>Value Proposition (Information affective engineering)</p>	<p>Prof. Takahiro Ishinabe</p>	<p>Our research group focuses on light control technology and its applications, aiming to develop human-friendly information systems for the future sustainable society. We will clarify the relationship between information and human cognition, understanding, and sensitivity and establish functional photonic devices based on the structural control of organic molecules and polymers.</p> <p>Research topics</p> <ul style="list-style-type: none"> • Structural Control of Organic Molecules and Polymers • Functional photonic devices • Clarification of the relationship between information and human cognition, understanding, and sensitivity and information • Human-friendly information display system
<p>Social System Design (Energy Sustainability)</p>	<p>Prof. Toshihiko Nakata</p>	<p>The laboratory focuses on an integrated design of energy systems for sustainable development. Methodologies includes dynamic modeling, GIS, Sankey diagram with social and economic dimensions based on both engineering economics and systems engineering. The research considers various aspect of energy systems such as technological learning by possible innovation, resilience, zero carbon society, and Sustainable Development Goals.</p> <ul style="list-style-type: none"> • Estimation and analysis of renewable energy resources potential • Estimation and analysis of energy demand • Design of carbon-neutral energy systems

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Social System Design (Advanced Energy Systems)	Prof. Kenji Nakamura	<p>The 21st century is called “the century of the environment.” In the electric power field, it is essential for further efficient energy generation, transportation, conversion, and usage in consideration of the environment. To realize it, static and rotating machines, and power electronics are key technologies. Our laboratory focuses on developing high-efficient electric machines and advanced energy systems consisting of several static and rotating machines and power converters.</p> <p>Research topics:</p> <ul style="list-style-type: none"> • Performance improvement of electric machines • Development of magnetic gears and geared-machines • Variable inductors for voltage control in electric power systems • Offshore wind power system • Electric mobility
Social System Design (Socio-Technical System)	Prof. Makoto Takahashi Assoc. Prof. Daisuke Karikawa	<p>The aim of our research is to enhance the safety of large-scale complex systems by utilizing the methods of risk assessment and management. Focusing on the aspects of interaction between human and machines, we study human factors problems from variety of viewpoints. In addition, dialogue between experts and citizens about science and technology is also studied for promoting mutual better understanding of the risk and benefit of advanced technologies. The examples of our research topics are as follows:</p> <ul style="list-style-type: none"> • Human factors study for air traffic control (ATC) system • Evaluation of human-machine interface using human brain mapping method • Cyber security • Science and technology communication
Social System Design (Management of Transportation and Society)	Assoc. Prof. Takeshi Nagae	<p>We conduct pioneering research of the transportation management for sustainable society, taking into account the recent advances in self-driving technology, electric vehicles, big data in transportation, etc.</p> <p>The relevant topics are:</p> <ul style="list-style-type: none"> • strategies for enhancing reliability and resiliency of urban road networks; • design of accessible and manageable smart public transportations; • development pricing/cost-sharing schemes for efficient mobility sharing; • analyses of a socio-economic system as a mass of intelligent but selfish agents; • analyses of a spacio-temporal dynamics of traffic jam by exploiting big data in transportation; • pricing and decision making on infrastructure projects under dynamic uncertainty.

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Social System Design (Intellectual Property Right)	Assoc. Prof. Nobuya Fukugawa	<p>Entrepreneurship and innovation are critical factors in the improvement in living standards. My lab has tackled with the topics listed below by econometrically analyzing data of patents, publications, and technology transfer.</p> <ul style="list-style-type: none"> • effect of scientific productivity on IPO of university spinoffs; • knowledge spillover from university research to industrial R&D; • technology transfer from <i>Kohsetsushi</i> to SMEs; • determinants of new firm creation at incubators; • effect of patent quality on IPO of biotechnology startups.

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