ESEP-G 2024 List of Host Laboratories (June 25 - August 1, 2024)

updated on December 1, 2023

No.	Department	Host Professor	Research Topic & Research Description	Special academic conditions required for research			Campus	Lab website
				1) Prerequisite knowledge and/or special skills and level of proficiency	2) Required academic background	3) Academic or research project experiences beneficial during selection process		
1	Civil Engineering	Professor NAGAYAMA Tomonori Associate Professor SU Di	Bridge Engineering, Structural Dynamics *When you choose this laboratory on T-cens, please choose "SU Di" for supervisor.	Structural mechanics and dynamics, basic programming knowledge	Civil Engineering		Hongo	http://bridge.t.u-tokyo.ac.jp/index_e.html
2	Mechanical Engineering	Professor TAKAGI Shu	Topic: Numerical Simulation of Dispersed Multiphase Flows In this study, numerical simulations of rising bubbles will be conducted. Application of this study is related to water purification system using aeration tank and also related to the deep ocean mining technology using air lift pump. Using the simulated data, the trainee is expected to visualize the flows and analyze them.	Fundamental Fluid Mechanics, Vector Analysis, Differential Equation	Graduate student is preferred.	If you have experiences of writing some programs in some projects, it is preferable, but not necessarily.	Hongo	https://www.fel.t.u-tokyo.ac.jp/index_en.html
3	Mechanical Engineering	Professor DAIGUJI Hirofumi	We work on energy and transport phenomena. We are aiming to advance diverse energy technologies for energy-saving systems by scrutinizing physical phenomena such as chemical reactions, phase changes and micro/nanoscale heat and mass transfer.	None	Basic courses in mechanical engineering such as thermodynamics and fluid mechanics	Project experience is not required.	Hongo	http://www.thml.t.u-tokyo.ac.jp/en/index.html
4	Mechanical Engineering	Professor SHIOMI Junichiro	Thermoelectric material/device, droplet wetting, or materials informatics (material x data)	Basic skills in programming or experience in experiments.	One of the following subject; Heat transfer, Fluid mechanics, Solid-state physics, Materials science, or Data science.	Any problem solving experience using computation or experiments.	Hongo	https://www.phonon.t.u-tokyo.ac.jp/?lang=en
5	Systems Innovation	Professor TAKAHASHI Jun Lecturer WAN Yi	Advanced Composite Material Technology for Future Society - CFRTP for the Future Transportation Society - Innovative Simulation Technology for New Services - Hybrid Materials for Improving Social Resilience http://j-t.o.oo7.jp/research-e.html *When you choose this laboratory on T-cens, please choose "WAN Yi" for supervisor.	Mechanics of materials Strength of materials	Mechanics of materials Strength of materials	Composite material Carbon fiber reinforced plastics	Hongo	http://j-t.o.oo7.jp/index-e.html

6	Systems Innovation	Professor KOSHIZUKA Seiichi	Trainees will participate in the research activities in the ongoing projects in Koshizuka- Shibata Laboratory. The projects are of computer simulation and computer graphics using particle methods: for example, fluid dynamics, solid dynamics, rain water infiltration in a car, droplet behavior, mixing process, flooding, tsunami, etc.	Experience of computer programming using C or other languages. Knowledge of basics of fluid dynamics or solid dynamics.			Hongo	http://mps.q.t.u-tokyo.ac.jp/lab/
7	Systems Innovation	Associate Professor KANNO Taro	1) Simulation/experimental study or data analysis on team cognitive behavior (e.g. communication analysis; exploring performance indicators; team behavior tracking; multimodal data analysis). 2) Studies related to hospital disaster training and management (e.g. analysis of exercise records, computer simulation of mass casualty incidents, software development). 3) Others (if requested, related to human-centered systems design, operation, and management).	Intermediate JAVA and/or Python programming skill for the topics related to simulation and data analysis	Preferable but not limited to human factors, cognitive engineering, resilience engineering, industrial engineering and management	NA	Hongo	http://www.tkanno.net/
8	Aeronautics and Astronautics	Professor IMAMURA Taro	Aerodynamic simulation around an airfoil using Computational Fluid Dynamics: We will provide you our in-house CFD program called UTCart for research purpose. The participant will be able to use the code, and analyse the flow field including the compressibility effect.	Windows Microsoft Office, Programming experience (python, if possible)	Fluid dynamics, Aircraft Dynamics	Any project related to aircraft designing would be beneficial	Hongo	http://park.itc.u-tokyo.ac.jp/rinoielab/english/index.html
9	Aeronautics and Astronautics	Associate Professor YOKOZEKI Tomohiro	Fabrication and Testing of Aeronautical Functional Materials Multifunctional polymer composites are widely developed in aerospace fields. This research involves the manufacturing of functional materials for aeronautical application and the testing and analysis of the fabricated materials.	Basic knowledge of Material Science	Graduate students are preferred.		Hongo	http://www.aastr.t.u-tokyo.ac.jp/e_index.html
10	Electrical Engineering & Information Systems	Professor NAKANO Yoshiaki	Semiconductor optoelectronic materials, devices, and circuits Description: Compound semiconductor material and device technologies for semiconductor lasers, optical modulators/switches, photonic integrated circuits, high efficiency solar cells, and solar fuels are studied.	None	Basic study on optics and semiconductor physics	None	Hongo / Komaba	http://www.ee.t.u-tokyo.ac.jp/~nakano/lab/e_index.html

11	Materials Engineering	Associate Professor EJIMA Hirotaka	Bioinspired Polymeric Materials (Bioinspired Underwater Adhesives, Interface Engineering using Metal-Phenolic Networks, etc.)	The basic knowledge on one of the following; materials science, chemistry and biology.	Not strictly required but better to have materials science, chemistry or biology background.	None	Hongo	http://biomacro.t.u-tokyo.ac.jp/indexen.html
12	Materials Engineering	Associate Professor MATSUURA Hiroyuki	1) Physical chemistry of non-metallic particle formation during solidification of steel: Experimental research to elucidate the precipitation mechanism of compounds and behavior of dissolved impurities in molten iron 2) Experimental study of lab-scale Vacuum Arc Remelting (VAR) process to evaluate its refining performance	Interest for pyrometallurgy Interest for conducting lab-scale experiments Basic knowledge of chemistry	Interest for chemical thermodynamics, kinetics, or transport phenomena and fundamental knowledge of chemistry	Better for having experiences of chemical analyses and use of SEM (not mandatory)	Hongo	http://www.pyro.t.u-tokyo.ac.jp/result/
13	Chemical System Engineering	Professor TAKANABE Kazuhiro	Electrocatalysis for energy conversion Investigation on developing electrocatalyst materials will be conducted. The works involve practical experiments in laboratory, related to materials synthesis, characterization, and catalytic testings.	Basic knowledge in the field of chemistry, chemical engineering, and/or materials science. Safetry training is required before entering the lab. The chemical lab skill and knowledge is preferred.	Chemistry; Chemical Engineering; Materials Science	Fundamental knowledge of chemistry, chemical engineering, and materials science	Hongo	https://www.catec.t.u-tokyo.ac.jp/
14	Bioengineering/ Precision Engineering	Associate Professor NAKAGAWA Keiichi	1) Ultrafast imaging: you will capture the electron and phonon dynamics in picosecond timescales to analyze light-matter interaction during laser processing. 2) Biophotonics: you will develop a new method to produce acoustic waves inside the body to manipulate the photons' behavior for optical biotechnologies. 3) Biophysics: you will investigate the interactions between physical energies (photon and phonon) and biological cells/tissues to control the functions of our body.	None	Knowledge of Bioengineering and Optical Engineering is advantageous but not mandatory at the time of application. Once selected, I will recommend a specific field of study tailored to the student's interests and background and provide relevant study materials.	None	Hongo	https://sites.google.com/view/nakagawagroup/ http://www.bmpe.t.u-tokyo.ac.jp/en/index.html