2020 ESEP INDIA　Host Labs and Research areas

2019/11/12

	LAB NAME	Title	Name of Faculty Member	School/Institute	Department	Research areas	Special academic conditions required for research ・Prerequisite knowledge and/or specific skill and its proficiency ・Required study field(s)	URL
1	**GEOTECH**	Professor	**Junichi KOSEKI**	School of Engineering	Dept of Civil Engineering	Experimental study on mechanical behavior of geomaterials	1) Prerequisite knowledge and/or special skills and level of proficiency Basic knowledge on soil mechanics and geotechnical engineering; 2) Required academic background Specialization in the field of civil engineering	http://geotle.t.u-tokyo.ac.jp/research/
2	**TAKEUCHI**	Professor	**Wataru TAKEUCHI**	Institute of Industrial Science	Dept of Civil Engineering	Remote sensing	No specific knowledge required	http://wtlab.iis.u-tokyo.ac.jp/en/index_e.html
3	**CONCRETE**	Professor Assistant Professor	**Tetsuya ISHIDA** **Yuya TAKAHASHI**	School of Engineering	Dept of Civil Engineering	Concrete structure and material	Mechanics of materials, structural mechanics, concrete structure	http://concrete.t.u-tokyo.ac.jp/en_2017/index.html
4	**BRIDGE**	Associate Professor Associate Professor	**Tomonori NAGAYAMA** **Di SU**	School of Engineering	Dept of Civil Engineering	Bridge Engineering, Structural Dynamics	Structural mechanics and dynamics, basic programming knowledge	http://www.bridge.t.u-tokyo.ac.jp/index_e.html
5	**SEKIMOTO**	Associate Professor	**Yoshihide SEKIMOTO**	Center for Spatial Information Science & Institute of Industrial Science	Dept of Civil Engineering	Estimation of People Flow in Combination of Sensing and Behavior Modeling Monitoring Urban Infrastructure Rapidly and Cheaply Operating Cities by Designing and Establishing Information Distribution	Some interests in spatial information science for urban management	http://sekilab.iis.u-tokyo.ac.jp/human-centered-urban-informatics/
6	**MITSUISHI/HARADA**	Profexxor Assoc.Prof	**Mamoru MITSUISHI** **Kanako HARADA**	School of Engineering	Dept. of Mechanical Engineering	Microsurgical robots: participant(s) will join one of our projects and study surgical robotic design, control, or simulation. The detailed topic will be determined considering the preference, experinece and ability of each participant.	1) Prerequisite knowledge and/or special skills and level of proficiency Programming in C++ 2) Required academic background Mechanical Engineering or Computer Science 3) Academic or research project experiences beneficial during selection process Robotics Image processing	http://www.nml.t.u-tokyo.ac.jp/en/research-e.html
7	**YANAGIMOTO**	Professor	**Jun YANAGIMOTO**	School of Engineering	Dept. of Mechanical Engineering	Advance knowledge of established forming technologies for engineering materials such as prediction and control of isotropicity in sheet metal rolling. Develop novel forming technologies for engineering materials such as warm forming of Carbon Fibre Reinforced Polymer. Advance knowledge of established engineering materials such as strain-rate- and temperature-dependence of phase transformation kinetics in High Strength Steel by material genome characterisation, correlating processing conditions to microstructural evolution and to mechanical properties. Develop novel engineering materials such as hot extruded aluminum-graphene alloy. Develop novel engineering structures such as aluminium alloy-Carbon Fibre Reinforced Polymer sandwich structure with dome-shaped core.	1) Prerequisite knowledge and/or special skills and level of proficiency Any of the following: New material design, structural design, thermo-mechanical processing, material characterisation, mechanical testing, Finite Element Method, regression analysis 2) Required academic background Mechanical Engineering, Materials Engineering or Aerospace Engineering 3) Academic or research project experiences beneficial during selection process Design and execution of laboratory experiments using thermo-mechanical testing machines, servo-mechanical press, tensile testing machine with Digital Image Correlation for strain measurement, multi-purpose mechanical testing machine, autoclave, Scanning Electron Microscope equipped with Energy-Dispersive X-Ray Spectroscopy and Electron Backscattered Diffraction, Finite Element Method via Abaqus CAE and / or mathematical models 4) Other conditions (if any) Capable of generating original research ideas, organising research schedule, undertaking research in a safe and ethical manner, presenting research results in lab seminars	http://www.cem.t.u-tokyo.ac.jp/?lang=en
8	**KNAKANO**	Professor	**Kimihiko NAKANO**	School of Engineering	Department of Mechanical Engineering	While attention on automated driving of automobiles increases, aiming for augmentation of a driver, human oriented mobility engineering researches such as shared control, human-machine interface, and high level sensing have been conducted. The sepecific topics are Haptic guidance steering, Human-Machine-Inteface of ADAS, In-Vehicle traffic light and Energy harvesting.	1)Prerequisite knowledge and/or specific skill and its proficiency : MATLAB 2)Required study field(s):Mechanical Engineering, Dynamics and Control	http://www.knakanolab.iis.u-tokyo.ac.jp/english/index_en.htm
9	**YSUDA**	Professor	**Yoshihiro SUDA**	Institute of Industrial Science	Dept. of Mechanical Engineering	Dynamics and Monitoring of Vehicle-Infrastructure-Human System Dynamics and Control of Vehicle Systems Study on Advanced Mobility with Motion Simulators		http://www.nozomi.iis.u-tokyo.ac.jp/index-e.html
10	**DAIGUJI**	Professor	**Hirofumi DAIGUJI**	School of Engineering	Dept. of Mechanical Engineering	thermal engineering		http://www.thml.t.u-tokyo.ac.jp/en/index.html
11	**YSUZUKI**	Professor	**Yuji SUZUKI**	School of Engineering	Dept. of Mechanical Engineering	Numerical simulation of heat and fluid flow for high-performance heat exchanger	1)Prerequisite knowledge and/or specific skill and its proficiency : fluid mechanics, heat transfer, computer programing such as C language 2)Required study field(s): Mechanical engineering 3) Academic or research project experiences beneficial during selection process Experience in CFD simulation using ANSYS/Fluent	http://www.mesl.t.u-tokyo.ac.jp/
12	**KUNIEDA**	Professor	**Masanori KUNIEDA**	School of Engineering	Dept. of Precision Engineering	Study on micromachining by electrochemical machining and electrical discharge machining	1) Prerequisite knowledge and/or special skills and level of proficiency Anyones who are interested in material processing technologies are welcome. 2) Required academic background Anyones who are interested in micromachining, materials processing technologies, manufacturing, production engineering, etc. are welcome. 3) Academic or research project experiences beneficial during selection process Micro-machining in many cases involves multi-physics phnomena. Any students who have fundamental knowledge about physics, mechanical engineering, materials, electrochemistry, and electrical engineering, etc. are welcome.	http://www.edm.t.u-tokyo.ac.jp/
13	**YOKOZEKI**	Associate Professor	**Tomohiro YOKOZEKI**	School of Engineering	Dept. of Aeronautics and Astronautics	Numerical/experimental analysis of functional aerospace structures Dynamic response of grid-type light weight structures is numerically or experimetally investigated in this project. Analytical results will be compared with experimental data.	1) Prerequisite knowledge and/or special skills and level of proficiency Knowledge of FEM,Programming: Python, Matlab 2) Required academic background：Graduate students are preferred.	http://www.aastr.t.u-tokyo.ac.jp/index_e.html
14	**IMAMURA**	Associate Professor	**Taro IMAMURA**	School of Engineering	Dept. of Aeronautics and Astronautics	Aerodyanmic flow analysis around aero-components of an aircraft using in-house computational fluid dynamics program, UTCart.	1) Prerequisite knowledge and/or special skills and level of proficiency Windows OS Microsoft Word, Excel, Powerpoint python 2) Required academic background Fluid dynamics (impcompressible, compressible) Computer science 3) Academic or research project experiences beneficial during selection process Aircraft Dynamics Aircraft Designing 4) Other conditions (if any) Interest in aeronautics	http://park.itc.u-tokyo.ac.jp/rinoielab/english/index.html
15	**TKOSEKI**	Professor	**Takafumi KOSEKI**	School of Engineering	Dept. of Electrical Engineering and Information Systems	electric engineering for transportation, e.g., electric railway system, electric energy conversion , electric machinery, control engineering	Basic knowledge on electromagnetics, electric circuit and electric measurement	http://koseki.t.u-tokyo.ac.jp/index_en.html
16	**YNAKANO**	Professor	**Yoshiaki NAKANO**	School of Engineering	Dept. of Electrical Engineering and Information Systems	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.	1)Prerequisite knowledge and/or specific skill and its proficiency None 2) Required academic background Basic knowledge on semiconductor physics	http://www.ee.t.u-tokyo.ac.jp/~nakano/lab/e_index.html
17	**TAURA**	Professor	**Kenjiro TAURA**	School of Engineering	Department of Information and Communication Engineering	Parallel computing; distributed computing; high performance computing; system software (programming languages, operating systems, performance analysis tools, data processing languages, machine learning frameworks)	1) Prerequisite knowledge and/or special skills and level of proficiency Applications who have skills and experiences in some of the following fields are highly appreciated: programming experiences, particularly in low level languages (C, C++, assembly); parallel and/or distributed programming; knowledge about fundamentals of computer systems (processor architectures, operating systems, programming languages, etc.); reasoning and analysis of program performance; application of high performance computing (scientific simulation, numerical algorithms, machine learning, large scale data processing, etc.) 2) Required academic background computer science 3) Academic or research project experiences beneficial during selection process Any project experience the applicant was deeply engaged in is beneficial. See the knowledge and skills section above for fields particularly welcome.	http://j-t.o.oo7.jp/index-e.html http://j-t.o.oo7.jp/research-e.html
18	**SHIMOGAKI/MOMOSE**	Professor Lecturer	**Yukihiro SHIMOGAKI** **Takeshi MOMOSE**	School of Engineering	Department of Materials Engineering	“Thin film deposition and characterization for device applications.” Nitride semiconductor (GaN/AlN), metallic films (Cu, Ni, Ru, Co), ceramic thin films (AlN, TiN, BN) will be synthesized by Chemical Vapor Deposition (CVD), Atomic Layer Deposition (ALD), or Supercritical Fluid Deposition (SCFD). The chemical bonding states of these materials will be analyzed by XPS (X-ray photo-electron spectroscopy. The surface structure will be observed by AFM (Atomic Force Microscopy), and their crystal structure will be discussed based on XRD (X-ray diffraction) measurements.	1) Prerequisite knowledge and/or special skills and level of proficiency Special knowledge/skills are not required. 2) Required academic background Basics of solid state physics and chemistry are required. 3) Academic or research project experiences beneficial during selection process If the applicant has experiences on operating vacuum equipment and knows about the characterization of solid materials, it will be appreciated.	http://www.dpe.mm.t.u-tokyo.ac.jp/index_e.html
19	**WATANABE**	Professor	**Satoshi WATANABE**	School of Engineering	Department of Materials Engineering	Development of interatomic potentials for molecular dynamics simulations via machine-learning: This project aims at establishing methodology to construct interatomic potentials for molecular dynamics (MD simulations using neural network. Examples of specific tasks are improvement of algorithm, improvement of training data sampling, training of neural network potential (including its performance test), and obtaining training data.	1) Prerequisite knowledge and/or special skills and level of proficiency None 2) Required academic background Basic knowledge on solid state physics or materials science. Specifically, on atom dynamics in solids. 3) Academic or research project experiences beneficial during selection process Molecular dynamics simulation; Python programming; machine learning; numerial analysis	http://cello.t.u-tokyo.ac.jp/index.php?id=7
20	**TAKAHASHI**	Professor	**JUN TAKAHASHI**	School of Engineering	Department of Systems Innovation	Research Topic: 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	1) Prerequisite knowledge and/or special skills and level of proficiency Mechanics of materials Strength of materials 2) Required academic background Mechanics of materials Strength of materials 3) Academic or research project experiences beneficial during selection process Composite material Carbon fiber reinforced plastics	http://j-t.o.oo7.jp/index-e.html http://j-t.o.oo7.jp/research-e.html
21	**HIROSE**	Professor	**Akira HIROSE**	School of Engineering	Dept. of Bioengineering	Artificial neural networks, wireless electronics, and their applications in bioengineering	・Prerequisite knowledge and/or specific skill and its proficiency Knowledge in one of the “required study fields” shown below, undergraduate level ・Required study field(s) One or some of electrical, electronic, information and mathematical engineering	http://www.eis.t.u-tokyo.ac.jp/
22	**SAKUMA**	Professor	**Ichiro SAKUMMA**	School of Engineering	Dept. of Bioengineering Dept. of Precision Engineering	Biomedical engineering,: Signal Prcessing of Optical Mapping Data of Heart (Analysis of caardiac arrhythmia) Computer aided surgery: Surgical navigation and Surgical devices	1) Prerequisite knowledge and/or special skills and level of proficiency Basic kowlege on applied mathematis such as Fourier Anakysis and signal/inmage processing and physics (dynamics, mechanics, etc.) 2) Required academic background Mechanoical system design Project based learning on engineering problems. 3) Academic or research project experiences beneficial during selection process Basic Computer Programming Skill	http://www.bmpe.t.u-tokyo.ac.jp/en/research.html