

School of Engineering  
Doctor Course Inter-Departmental Education Program  
“Mechanical Systems Innovation” (GMSI)



GMSI Program Leader  
Shigeo MARUYAMA

## 1. Goal

By continuing the educational programming of the Global COE Program “Mechanical Systems Innovation” – the aim of which was to develop creative human resources to be future global leaders – we establish a series of lectures and academic exercises for the study of frontier technical areas.

The core courses Engineering Literacy I, II, and III will cultivate skills in communication, information and ethics, and Engineering Competency I, II, and III will cultivate proficiency in leadership, problem setting /resolution/execution, responsibility, sense of duty, etc.

By cultivating literacy and competency in addition to fundamental attainment and specialized knowledge, our goal is to train tough, internationally competitive young leaders who will be able to lead in both academic and industrial aspects of their respective fields. We seek students from all engineering fields, not limited just to one specific field of study, to participate in this newly implemented inter-departmental graduate program. Those who meet the program requirements will be awarded a certificate of completion.

This program will not provide any RA salary, but participation in this program may be taken into consideration during selection and evaluation of other financial support programs, such as the UT Graduate School of Engineering’s Doctoral Student Special Incentives Program (SEUT Fellowship A,B) etc. (may not apply to all departments.)

## 2. Educational Program Instructors

- Mechanical Engineering: Mamoru Mitsuishi, Shigehiko Kaneko, Shigeo Maruyama, Chisachi Kato, Masayuki Nakao, Yoshihiro Suda
- Aeronautics and Astronautics: Shinji Suzuki, Nobuo Takeda, Shin-ichi Nakasuka, Shinsuke Sakai
- Technology Management for Innovation: Kazuro Kageyama
- Systems Innovation: Shinobu Yoshimura, Toyohisa Fujita
- Precision Engineering: Tadatomo Suga, Kiyoshi Takamasu
- Materials Engineering: Yuichi Ikuhara, Toshihiko Koseki, Satoshi Watanabe
- Applied Chemistry: Takehiko Kitamori
- Chemical System Engineering: Tatsuya Okubo, Masahiko Hirao

## 3. Contact (registration or enquiry)

Students who wish to participate in the program should contact the office below after obtaining permission from your advisor. Details regarding registration will be sent at this time.

The University of Tokyo Department of Mechanical Engineering  
GMSI Program Office (Engineering Building 2 Room 203)  
TEL 03-5841-0696 E-mail: office@gmsi.t.u-tokyo.ac.jp  
<http://gmsi.t.u-tokyo.ac.jp>

#### 4. Educational Program

A minimum of 12 credits must be obtained from the following course list (at least 4 credits of which must be from core courses). Completion will be contingent on validation of the content of the student's research by the program faculty council.

Course Number	Program	Language	Primary Instructor(s)	Description / Overview	Date/Time/Place
3799-149 /3722-137	Engineering Literacy I (1cr.)	J	Prof. Maruyama (Mech.) Prof. Okubo (Chem.) Prof. Yokono (Mech.)	Course is centered around Technological Literacy.	Summer Thursday 13:00-14:40 Eng.Bldg.212 Parallel to Advanced Study of Technology I. Double registration not allowed.
3799-150 /3722-138	Engineering Literacy II (1cr.)	J	Prof. Maruyama (Mech.) Prof. Okubo (Chem.) Prof. Yokono (Mech.)	Course is centered around knowledge of the law.	Winter Thursday 14:50-16:30 Eng. Bldg.223
3799-151 /3722-139	Engineering Literacy III (1cr.)	E	Prof. Suzuki (Aero.) Prof. Koseki (Mater.) Prof. Morimura (IIIIEE)	Course is centered around Language Literacy.	Intensive, TBA
3799-146 /3722-134	Engineering Competency I (2cr.)	J/E	Prof. Kaneko (Mech.) Prof. Yokono (Mech.) Prof. Mitsuishi (Mech.) Lect. Harada (Mech.)	Project Based Learning to cultivating the leadership skills needed to engage actively in industry and academia.	Winter Thursday 16:40-18:20 Eng. Bldg. 222
3799-147 /3722-135	Engineering Competency II (2cr.)	J/E	Prof. Takamasu (Precision) Prof. Suga (Precision) Prof. Yokono (Mech.)	Approximately 2-6 month investigation of at least one topic through collaborative research or a domestic/international internship.	Intensive
3799-148 /3722-136	Engineering Competency III (2cr.)	E	Prof. Watanabe (Mater.) Prof. Yokono (Mech.) Prof. Mitsuishi (Mech.) Lect. Harada (Mech.)	English-only camp where Japanese and international participants discuss and exchange ideas on various engineering-related research topics.	Intensive
3722-125	Extended Nanospace Laboratory "Multiscale Calculation" (2 cr.)	J/E	Prof. Kaneko (Mech.) Prof. Maruyama (Mech.) Prof. Mitsuishi (Mech.)	Application of the extended nanospace. MEMS or Simulation exercise for extended nanospace	Summer Thursday 16:40-18:20 Eng. Bldg. 222
3722-118	Basic Theory of Extended Nanospace	E	Prof. Maruyama (Mech.)	Molecular dynamics and fundamental theory of the extended nanospace	Winter Tuesday 13:00-14:40 Eng. Bldg.222
TBD	Nano/Micro Devices (2 cr.)	E	Prof. Kitamori (Appl. Chem.)	Realization of devices based on fundamentals of extended nanospace	Intensive, TBA
3729-041	Nano/Micro Mechanical Systems (2 cr.)	J	Prof. Takamasu (Precision)	Synthesis of innovative mechanical systems through integration of nano/micro devices, with real-world examples	Winter Tuesday 14:50-16:30 Eng. Bldg.146
3722-117	Nano/Micro Medical Systems (2 cr.)	J	Prof. Mitsuishi (Mech.)	Gene therapy, ultrasonic diagnostics and treatment, etc. Fundamentals and realization of nano/micro systems.	Summer Thursday 10:30-12:10 Eng. Bldg.222
3722-119	Nano/Micro Energy Systems (2 cr.)	E	Prof. Suzuki (Mech.)	Study of the fundamentals of microscale thermal hydraulics, micro energy conversion systems, etc. and their implementation.	Winter Wednesday 10:30-12:10 Eng. Bldg.223