

- ◆Department of Mechanical Sciences and Engineering
- ◆Department of Mechanical and Control Engineering
- ◆Department of Mechanical and Aerospace Engineering

1. Departments Outline

The three Mechanical and Engineering Departments of the Graduate School of Science and Engineering are run in an integrated and collaborative manner as a unique group of mechanical engineering courses by world standards for the purpose of producing the world's finest researchers and engineers in the field of mechanical, control and informatics engineering. The curricula of these departments are combined with the curriculum of the Department of Mechanical and Environmental Informatics to allow graduate students to select their subjects from a truly broad spectrum of scientific and engineering subjects. In the research work, each student is engaged in one of the most advanced research themes in their respective field to broaden as well as deepen his/her knowledge of the special field.

2. Graduation Requirements

For a Master's degree / Doctoral degree, a student must satisfy the following requirements.

All students are strongly advised to consult with their own supervisors about the study plan.

【Master's degree】

For a Master degree, a student must satisfy the following requirements.

(1) Credits

- 30 credits or more from the Graduate School Courses.
 - Research Courses(研究科目群)
 - (a) 8 credits from the Seminar Courses. *1
 - Courses by Departments(専門科目群)
 - (a) 16 credits or more from the Departmental Courses. *2(専攻専門科目)
 - (b) 4 credits or more from the Courses in Other Departments. *3(他専攻科目)
 - 2 credits or more from the Liberal Arts and General Education(G). (大学院教養・共通科目群)
- *1 Seminar in each semester is the required subject. 8 credits are the requirement for the normal study period of master study, i.e., two years, or four semesters. If the student completes the master course less than 4 semesters, the required credit is reduced according to the number of spent semesters, e.g., 4 credits for two semesters (minimum), and 6 credits for 3 semesters.
- *2 Because the curricula of the three Mechanical and Engineering Departments are unified, the classes in Table 2 are regarded as the Departmental Courses. (専攻専門科目)
- *3 Courses in Other Departments are chosen from the classes given by the other departments. The classes in Table 2 that are given by the Department of Mechanical and Environmental Informatics are not applicable for the Courses in Other Departments.

(2) Thesis

A student must complete and submit the master thesis to take the final examination, and he/she must pass the examination.

【Doctoral degree】

For a Doctoral degree, a doctoral candidate must satisfy the following requirements.

- (1) Seminar in each semester is the required subject. Required number of the credit is the same idea with that of master's degree.
- (2) If the candidate enrolls in the Integrated Doctoral Educational Program, Off-Campus Project and the related subjects (System Project Research) are required to complete.
- (3) The candidate must have sufficient academic achievement, ex. presentation in international conferences

and/or acceptance of journal papers in academic field.

- (4) The candidate must complete and upload a thesis for the degree, and take the final examination and the evaluation of his/her thesis.

The candidate who satisfies the above requirements and passes the final examination is awarded a Doctoral degree.

3. Tables of Course Subjects

Table 1 Research Courses(研究科目群)

Course Number	Remarks* (See footnotes)	Course	Department Offering course**	Credit	Chair	Semester S: Spring A: Autumn	Opening year a: Annually e: Even o: Odd
47001 47002	I, ACEEES	Specific Interdisciplinary Subject in Mechanical and Control Engineering A, B	MCE	0-2-0	K. Hanamura S. Hirai et al.	S A	a
48001 48002	I, ACEEES	Specific Interdisciplinary Subject in Mechanical and Aerospace Engineering A, B	MAE	0-2-0	M. Tanahashi	S A	a
40701 40702 40703 40704	R, MP	Seminar in Mechanical and Production Engineering A-D (For IGP-A)	ME	0-2-0	Academic Adviser	A S A S	a
46721 46722 46723 46724	R, MP	Seminar in Mechanical Sciences and Engineering I – IV (For IGP-C)	MSE	0-2-0	Academic Adviser	S A S A	a
46801 46802 46803 46804 46805 46806	R, DP	Seminar in Mechanical Sciences and Engineering V – X (For IGP-A and IGP-C)	MSE	0-2-0	Academic Adviser	S A S A S A	a
47721 47722 47723 47724	R, MP	Seminar in Mechanical and Control Engineering I – IV (For IGP-C)	MCE	0-2-0	Academic Adviser	S A S A	a
47801 47802 47803 47804 47805 47806	R, DP	Seminar in Mechanical and Control Engineering V – X (For IGP-A and IGP-C)	MCE	0-2-0	Academic Adviser	S A S A S A	a
48721 48722 48723 48724	R, MP	Seminar in Mechanical and Aerospace Engineering I – IV (For IGP-C)	MAE	0-2-0	Academic Adviser	S A S A	a
48801 48802 48803 48804 48805 48806	R, DP	Seminar in Mechanical and Aerospace Engineering V – X (For IGP-A and IGP-C)	MAE	0-2-0	Academic Adviser	S A S A S A	a

*B: Basic, A: Applied, I: Interdisciplinary, R: Required, MP: Master's Program, DP: Doctoral Program,

ACEEES: Only the ACEEES students can take this course. In order to promote interdisciplinary research on campus, students are required to take/register courses provided by designated other majors/programs rather than their own majors/programs.

**MSE: Dept. Mechanical Science and Engineering, MCE: Dept. Mechanical and Control Engineering, MAE: Dept. Mechanical and Aerospace Engineering

**ME: three mechanical engineering departments (MSE, MCE, and MAE)

Table 2 Courses by Departments(専門科目群)

Course Number	Remarks* (See footnotes)	Course	Department Offering course**	Credit	Chair	Semester S: Spring A: Autumn	Opening year a: Annually e: Even o: Odd
40100	A	Advanced Course of Fluid Power Robotics	ME	1-0-0	H. Tsukagoshi	A	a
40182	A	Thermal Radiation Transfer Engineering in Environment	ME	2-0-0	K. Hanamura	S	a
40067	B	Advanced Course of Mechanical Vibration	ME	2-0-0	M. Nakashima M. Okuma H. Yamaura	A	a
77053	A	Introduction to Biomedical Instrumentation	MEI	2-0-0	T. Yagi	A	o
77060	A	Introduction to Neural Engineering	MEI	2-0-0	T. Yagi	S	e
40032	B	Advanced Course on Energy Physics	ME	2-0-0	K. Fushinobu	S	a
40082	B	Intensive Thermal Engineering	ME	2-0-0	K. Okazaki T. Nozaki S. Okawa Y. Murakami	A	a
40042	A	Thermal Engineering in Environmental Problems	ME	1-0-0	S. Hirai	A	a
40147	B	Advanced Course on Basic Phenomenon of Liquid/Solid Phase Change	ME	1-0-0	S. Okawa	S	a
40181	A	Physical Chemistry of Solution and Mixture	ME	1-0-0	T. Inoue	A	a
40044	A	Advanced Course of Measurement Systems	ME	1-0-0	S. Ohyama	A	a
77037	A	Mathematical Processing of Measurement Information	MEI	2-0-0	S. Hara	A	e
77054	A	Linear Systems and Control	MEI	1-0-0	T. Hayakawa	A	a
77055	A	Nonlinear and Adaptive Control	MEI	1-0-0	T. Hayakawa	A	a
77059	A	Control Theory for Robot Intelligence	MEI	2-0-0	J. Imura	S	a
40086	B	Advanced Course of Mechanics of Materials	ME	1-0-0	K. Kishimoto	A	a
40150	A	Advanced course of Mechanics of Fatigue and Fracture of Materials	ME	1-0-0	H. Nakamura	S	a
40146	B	Linear Fracture Mechanics	ME	1-0-0	A. Todoroki Y. Mizutani	A	a
40019	A	Special Lecture on Strength of Materials A	ME	1-0-0	K. Kishimoto	S	e
40020	A	Special Lecture on Strength of Materials B	ME	1-0-0	H. Nakamura	A	e
40021	A	Special Lecture on Strength of Materials C	ME	0-1-0	A. G. Molina Y. Mizutani	A	o
40022	A	Special Lecture on Strength of Materials D	ME	1-0-0	H. Inoue M. Sakaguchi	A	o
40174	A	Creative Design for Innovation	ME	1-1-0	C. Mougenot	A	a
40031	I	Intelligent Control	ME	1-0-0	D. Kurabayashi	S	a
40180	A	Human Brain Functions and Their Measurements	ME	2-0-0	T. Yoshida	S	a
77006	A	Advanced Course of Inverse Problems	MEI	1-0-0	K. Amaya	A	a
40162	B	Manufacturing Engineering and Technology I	ME	1-0-0	M. Yoshino	S	o
40170	B	Manufacturing Engineering and Technology II	ME	1-0-0	T. Yamamoto	S	e
40015	I	Special Lecture on Mechano-Infra Engineering A	ME	1-0-0	To be assigned	S	a

40016	I	Special Lecture on Mechano-Infra Engineering B	ME	1-0-0	To be assigned	S	a
40017	I	Special Lecture on Mechano-Infra Engineering C	ME	1-0-0	To be assigned	A	a
40018	I	Special Lecture on Mechano-Infra Engineering D	ME	1-0-0	To be assigned	A	a
40138	A	Automotive Structural System Engineering (TAIST)	ME	3-0-0	H. Yamaura H. Morimura K. Inaba	A	a
40139	A	Automotive Comfort Mechanics Engineering (TAIST)	ME	3-0-0	M. Yamakita K. Hanamura M. Okuma	A	a
40140	A	Advanced Production Engineering (TAIST)	ME	3-0-0	S. Suzuki M. Yoshino K. Takahashi	A	a
40141	A	Combustion Engineering (TAIST) [This class is not open in 2014.]	ME	3-0-0	S. Hirai H. Kosaka	A	a
40142	A	Advanced Internal Combustion Engine Engineering and Future Power Train (TAIST)	ME	3-0-0	H. Kosaka K. Hanamura S. Hirai	A	a
40143	A	Basics of Automotive Design (TAIST)	ME	3-0-0	M. Okuma	A	a
40144	A	Practice of Automotive Design (TAIST)	ME	3-0-0	To be assigned	A	a
40165 40166	I	System Project Research A, B [Required only for the student belonging to the Integrated Doctoral Education Program]		0-2-0	Academic Adviser	A S	a
40167 40168	I	Mechanical and Production Engineering Off-Campus Project I, II [Required only for the student belonging to the Integrated Doctoral Education Program]		0-4-0	Academic Adviser	A S	a

*B: Basic, A: Applied, I: Interdisciplinary, R: Required, MP: Master's Program, DP: Doctoral Program

**MSE: Dept. Mechanical Science and Engineering, MCE: Dept. Mechanical and Control Engineering, MAE: Dept. Mechanical and Aerospace Engineering

**ME: three mechanical engineering departments (MSE, MCE, and MAE), MEI: Dept. Mechanical and Environmental Informatics

Table 3 Liberal Arts and General Education(G) (大学院教養・共通科目群)

	Remarks
International Communication (G) (大学院国際コミュニケーション科目)	Select the classes listed in left.
Interdisciplinary Courses (G) (大学院総合科目)	Only the international students can take the Subjects for International Students.
Interdepartmental Courses (G) (大学院広域科目)	Refer to VI.Liberal Arts and General Education
Arts and Humanities (G) (大学院文明科目)	
Career Development Courses (G) (大学院キャリア科目)	
Courses for Developing Creativity (G) (大学院創造性育成科目)	
Courses for International Students (G) (大学院留学生科目)	

4. Syllabus of Course Subjects

Refer the syllabus of IGP (A) (III.International Graduate Program (IGP-A) Sustainable Engineering Program 5.4 Mechanical and Production Engineering Course), and the syllabus of Dept. Mechanical Environmental Informatics (III.International Graduate Program (IGP-A) Education Program of Advanced Information Technology Leaders 4. Table of Course Subjects and/or V.International Graduate Program (IGP-C) Department of Nuclear Engineering 3.Course List of Nuclear Engineering).