

Course Requirement Guide Book

(October 2021)

International Master's Degree Program



TOYOHASHI
UNIVERSITY OF TECHNOLOGY

1-1 Hibirigaoka Tenpaku-cho Toyohashi-shi Aichi 441-8580, JAPAN

I Requirements for completion

1. Requirements for completion

To complete the master's course, a student must participate in the course for two or more years, and must acquire the minimum credits required as follows. A student must carry out a research program under proper guidance by faculty members. In addition a student must submit a master's thesis, and must pass a review and final examination.

Note that students showing excellent achievement may finish in a shorter study period.

Classification	Required credits for completion	Remarks
General subjects	6	
Specialized subjects		
Mechanical Engineering	24	6 credits in total can be substituted with a combination of the following options, with permission from the student's supervisor. <ol style="list-style-type: none"> 1. Specialized master's subjects from a other department 2. Specialized master's subjects held in Japanese (The same subject cannot be taken in both Japanese and English)
Electrical and Electronic Information Engineering	24	
Computer Science and Engineering	24	
Applied Chemistry and Life Science	24	
Architecture and Civil Engineering	24	
Grand total	30	

2. Application for degree

Only a student who has gained the credits required for completion, or who is expected to acquire the required credits can apply for the master's degree. Degree application and procedures for submission of a thesis for a master's degree shall be posted on a bulletin board before the submission period.

II Class registration, examination, and attendance period

1. Class registration method

Classes shall be registered according to the program schedule of the student's respective major.

(1) Making study plans

To make study plans, the student should read this Guide Book thoroughly, and follow the instructions and advice given during the orientation and by the supervisors.

The Course Schedule is provided at the beginning of each academic year.
Schedules for intensive classes will be posted at "KYOMU JOHO SYSTEM" and on a bulletin board when the details are fixed.

(2) Class Registration

Students must register for classes using "KYOMU JOHO SYSTEM" at the TUT website <https://kyomu.office.tut.ac.jp/portal/> or by the form "Application for Subjects" during the designated period.

*Classes cannot be registered for nor withdrawn from after the designated registration period. Classes with no registration will not be accredited in any case.

NOTES

- 1) To take specialized subjects given in other departments, or given in Japanese, students must obtain approval from their supervisor and the subject instructor with the form "Application for Registration in Subjects in Other Department," before registering.
- 2) If the student does not attend the classes nor take the examinations, credits will not be given even if the registration is made.
- 3) A student cannot re-register for a subject once credits are given.
- 4) Only one subject can be registered for in a given time schedule. Note that this does not apply to subjects being repeated for examinations only, or intensive subjects.

(3) Confirming and amending the registration

To confirm or amend class registration, students should access "KYOMU JOHO SYSTEM", and follow the manual's instructions.

(4) Repeating classes

In principal, a student who has failed a subject with regular examinations or has not gained credits for some other reasons can take the same subject again in the next academic year. To repeat a subject, the student must register again.

2. Examination

Examinations include regular examinations and make-up examinations.

(1) Regular examination

In principle regular examinations shall be held during the set period at the end of each term.

All students are to check the examination schedule in the academic calendar at "KYOMU JOHO SYSTEM" or on the bulletin boards. Note that examinations may be held at any time found necessary by the subject instructor.

(2) Make-up examination

1) Make-up examinations shall be held only when a student cannot take the regular examination for one of the following reasons. The student must gain the approval of the subject instructor using the form "Request for a make-up examination".

- a) Illness (doctor's medical certificate must be submitted)
- b) Accidents, disaster (certificate must be submitted), or other special reason (a letter explaining the reason must be submitted)

2) "Request for a make-up examination" must be submitted to the Educational Affairs Division within one week from the final date of the regular examination.

3) If a student fails to take the make-up examination, further examinations will not be allowed.

(3) Recognition of Credits and Grading System

Course instructors recognize credits for courses based on the results of examinations, etc.

① Student performance is graded based on the following standards. S, A, B and C are passing grades while D is a failing grade. Credits are awarded to grade C and above.

- S···90 to 100 points
- A···80 to 89 points
- B···70 to 79 points
- C···60 to 69 points
- D···59 points or less

② With the aim of making course grades internationally compatible, TUT has launched a Grade Point Average (GPA) system, providing a barometer to judge the overall performance of students, starting with students who entered TUT in academic year 2018. The objectives of the GPA system are to fairly grade performance and to enhance students' desire for study by calculating the point average as a barometer to indicate the state and results of students' academic performance.

Grade	Points	Description of Grade	Judgement	Grade Point
S	90 to 100 points	Excellent—Outstanding performance	Pass	4.0
A	80 to 89 points	Good—Excellent performance		3.0
B	70 to 79 points	Satisfactory—Generally sound performance		2.0
C	60 to 69 points	Sufficient—Performance meeting the minimum passing criteria		1.0
D	59 points or less	Failure	Failure	0.0
N	-	Course for credit recognition (not included in GPA)	Pass (Recognition)	N/A
H	-	Abandoned course (Course the student abandoned by continuing to miss the class or no taking an examination without cancelling the registration)	Abandonment	0.0
K	-	Invalidated grade due to misconduct	Invalid	0.0

GPA is an average calculated by converting above letter grades to grade points (GP) ranging from 0.0 to 4.0, multiplying these grade points by the number of credits for each course, and then dividing the total grade points by the total amount of registered credits.

Note, however, that grades from the following courses cannot be used to calculate GPA. Such courses are marked with a hyphen in the GP column of the grade report.

(1) Courses for which credits were earned on the basis of the credit exchange system conducted with other universities, graduate schools, etc.; courses that were registered at other universities or junior colleges while enrolled in TUT; and courses that were registered at universities, junior colleges or graduate schools in foreign countries

(2) Courses for which credits were earned before entering TUT and were recognized after entering TUT; courses that were registered at TUT, other universities or junior colleges before entering TUT; and courses registered at universities, junior colleges or graduate schools in foreign countries (including courses registered for as a credited auditor student)

(3) Courses for which credits were earned through mid-course entry, interschool transfer, readmission, or studying abroad, and were subsequently recognized

(4) Courses for which credits cannot be counted toward graduation requirements; and courses for which credits were earned through the system for advance registration to graduate school programs

(5) Courses that are designated separately by each department (On-the-job Training (internships), Supervised Research, Seminars, experimental courses, and practical training courses)

- ③ Each student can check grades and GPA for recognized credits in the "KYOMU JOHO SYSTEM".

(4) System for appealing grades

Students who have concerns about their grades for a particular semester should inquire from the class instructor. If students have complaints regarding the instructor's response, they can submit an appeal. Students, however, cannot appeal the reason or basis for the grade.

Students should contact the Educational Affairs Division for details.

3. Maximum years of attendance and related matters

(1) Maximum years of attendance

A student may not be in the master's course at the university for more than four years.

(2) Leave of absence

If a student cannot attend classes for two or more months consecutively due to illness or other special reasons, the student may submit the form "Request for leave of absence" to the Educational Affairs Division after getting approval from the supervisor, a member of the academic affairs committee, and their department head. Upon approval by the President, the student can take a leave of absence (maximum two years in total).

The period of this absence will not be counted in the "Maximum years of attendance" mentioned in paragraph (1) above.

To return to school after the approved period ends, the student must submit the form "Notice of return to university".

To return to school before the approved period following the removal of cause of absence, the student must submit the form "Application for return to university" and obtain approval.

(3) Withdrawal

If a student wants to withdraw from the university, the student must submit the form "Application for withdrawal from university" to the Educational Affairs Division after getting the approval from the supervisor, a member of the academic affairs committee, and their department head. Upon approval by the President, the student can withdraw from the university.

Note that the tuition fee has to be paid in full even if the student withdraws in the middle of a term.

(4) Removal from the University



A student will be removed from the university for the following reason.

- 1) A student exceed the period mentioned above in paragraph (1) "Maximum years of attendance".
- 2) A student cannot return to school after the period of absence mentioned above in paragraph (2) "Leave of absence".
- 3) A student dies, or disappears.
- 4) A student who has been approved for half exemption or postponement of admission fee payment and does not pay the admission fee by the designated date.
- 5) A student fails to pay the tuition and does not pay even after a warning.

4. Other matters

(1) Information about canceled or make-up classes

All students are requested to double-check their class schedules and other information using the following means:

Location		information
TUT website	https://kyomu.office.tut.ac.jp/portal/Public/Board/BoardList.aspx 	Canceled or make-up classes
TUT website for mobile phones	https://kyomu.office.tut.ac.jp/mobile/Main.aspx  *Mobile tagging by camera phones	Canceled or make-up classes

(2) Classes/exams when a STORM WARNING is announced.

If a Storm Warning (*Bo-fu Keiho*) is announced for Toyohashi city or the South-east area of the Mikawa region, TUT will deal with classes or examinations as follows:

- 1) To prevent any accident, all classes will be canceled during the Storm Warning.
- 2) If the Storm Warning is cleared before 7:00 am, all classes will be on schedule.
- 3) If the Storm Warning is cleared between 7:00 am and 11:00 am, all classes will start from the 3rd period (*Classes in the 1st and 2nd period will be canceled).
- 4) If the Storm Warning continues after 11:00 am, all classes will be canceled.
*All cancelled classes and examinations will be rescheduled.
- 5) Whether or not a storm warning is announced, classes may be canceled because of suspension of public transportation service or some similar occurrence, at the discretion of the Vice President for Educational Affairs.
- 6) If cancelled classes cannot be held on YOBIBI (optional extra day), and final exams, on the alternate exam day, a Saturday may be used as an alternate day for classes or exams.
- 7) The above shall not apply to remote classes.

(3) University's e-mail account

TUT strongly recommends all students to set up the e-mail forwarding service in order to receive important information of class-scheduling, grading and other communications from the university.

(4) Absence from classes

When you have to be absent from classes due to illness, bereavement or other reasons, you need to inform these reasons to your subject instructor yourself. Absences will be dealt with at the discretion of subject instructors.

Reasons for Absence	Documents you should submit	Procedure
Illness/Injury	Medical certificate or medical expense receipts	Students inform lecturers directly
Bereavement leave	Letter or notice of funeral	Students inform lecturers directly
Infectious diseases*	Medical certificate or Medical expense receipts	Students inform Student Affairs Division (0532-44-6553), TUT office staff will report to lecturers.

*TUT may require suspension in order to prevent the spread of infection. Suspension orders will be notified by email from TUT or KYOMU JOHO SYSTEM.

For student information about the new coronavirus, check the university website or the email from TUT.

III Curriculum

1. Classes and credits

(1) Classes

Classes are divided into General Subjects and Specialized Subjects. Numbers of credits are set for each subject.

(For the subjects to be offered, see the following pages.
See the web syllabus for the details of each subject.)

(2) Compulsory subjects and elective subjects

- 1) Compulsory subjects are the subjects that must be completed as a requirement of the major.
- 2) Elective subjects can be selected and taken from those subjects being offered for the designated numbers of credits.

(3) Calculating credits

Teaching types of classes are lectures, exercises, experiments, practical or hands-on training, and they are offered individually or in combinations, and the standard is that it takes 45 hours of study to earn one credit. This is calculated in the following ways.

- (a) For lectures, 15 hours of class time and 30 hours of preparation and review for one credit.
- (b) For exercises, 30 hours of class time and 15 hours of preparation and review for one credit.
- (c) For experiments, practical or hands-on training, 45 hours of class time for 1 credit.

(4) Class times and class schedule.

The following are the class times.

Period	1	2	3	4	5	6
Time	8:50 am– 10:20 am	10:30 am– 12:00 (noon)	1:00 pm– 2:30 pm	2:40 pm 4:10 pm	4:20 pm– 5:50 pm	6:00 pm– 7:30pm

The class schedule is posted on "KYOMU JOHO SYSTEM" at the beginning of each semester. Notification of changes to the class schedule is also posted.

Courses listed in the "Intensive" section of the class schedule are ones that are taught intensively at irregular times. Once the dates of intensive courses are decided, the information is posted.

(5) School term

A school term is determined according to the academic year calendar, and consists of two terms; Spring term (from April 1 until September 30) and Fall term (from October 1 until March 31)

General subjects

2021.10

Compulsory / Elective	Subject Name	Excluded from GPA	Credits	Classes/Week				Instructor	note	
				1st grade						2nd grade
				Fall 1	Fall 2	Spring 1	Spring 2			
				2021.10 - 2022.3		2022.4 - 2022.9				2022.10 - 2023.9
Compulsory	Ethics for Researchers		1	1			(0.5)			
	Culture and Communication I		2	1			R.Asai			
	Culture and Communication II		2				1	Leung		
	Principles of Japanese Conversation		2			1	(1)	Y. Muramatsu		
	Principles of Japanese Grammar		2	1			1	Y. Yoshimura		
	Japanese Life Today		2			1	(1)			
	Japanese Industrial Technologies and Innovations		2	1			(1)	※		

※JICA Trainees have to register for the 2 subjects: "Japanese Life Today" and

"Japanese Industrial Technologies and Innovations" and are required to earn these academic credits.

◆ Those subjects whose numbers marked with "()" will be held every year.

◆ "0.5" signifies that this subject will be held in any one of a quarter term (Spring 1, Spring 2, Fall 1 or Fall 2).

Mechanical Engineering

2021.10

Compulsory / Elective	Subject Name	Excluded from GPA	Credits	Classes/Week			Instructor	note	
				1st grade					2nd grade
				Fall 1	Fall 2	Spring 1			
				2021.10 - 2022.3	2022.4 - 2022.9	2022.10 - 2023.9			
Compulsory	Seminar on Mechanical Engineering I	○	4	4			Supervisor		
	Seminar on Mechanical Engineering II	○	2				2	Supervisor	
	Thesis Research on Mechanical Engineering	○	6	9			Supervisor		
Elective	Vibration Engineering		1		1			S. Kawamura	
	Applied Mechanics of Materials		1				0.5	T. Adachi	
	Micromachining Engineering		1		1			T. Shibata	
	Science and Technology of Thin Films		1				0.5	M. Izaki	
	Microstructural Control of Metallic Materials		1		1			H. Miura	
	Microstructure and Properties of Structural Materials		1				0.5	Y. Todaka	
	Modern Control Engineering		1		1			K. Takagi	
	Precision Mechatronics		1				0.5	K. Sato	
	Robot Kinematics		1	1			(0.5)	N. Uchiyama	
	Advanced Agricultural Engineering		1			1	(0.5)	K. Takayama	
	Fluid Power Engineering		1	1				H. Yanada	
	Advanced Aeroacoustics		1				0.5	A. Iida	
	Combustion Theory		1		1			Y. Nakamura	
	Microscale Transport Phenomena		1				0.5	K. Doi	
	※Advanced Mechanical Systems Design I		2		1		(1)	Supervisor	
	※Advanced Mechanical Systems Design II		2			1	(1)	Supervisor	
	※Advanced Materials and Manufacturing Process I		2		1		(1)	Supervisor	
	※Advanced Materials and Manufacturing Process II		2			1	(1)	Supervisor	
	※Advanced System, Control and Robotics I		2		1		(1)	Supervisor	
	※Advanced System, Control and Robotics II		2			1	(1)	Supervisor	
※Advanced Energy and Environmental Engineering I		2		1		(1)	Supervisor		
※Advanced Energy and Environmental Engineering II		2			1	(1)	Supervisor		

◆ Up to two subjects marked with ※ can be acquired. Consult your supervisor about details.

◆ Those subjects whose numbers marked with "()" will be held every year.

◆ "0.5" signifies that this subject will be held in any one of a quarter term (Spring 1, Spring 2, Fall 1 or Fall 2).

Electrical and Electronic Information Engineering

2021.10

Compulsory / Elective	Subject Name	Excluded from GPA	Credits	Classes/Week			Instructor	note	
				1st grade		2nd grade			
				Fall 1	Fall 2				Spring 1
				2021.10 - 2022.3	2022.4 - 2022.9	2022.10 - 2023.9			
Compulsory	Seminar on Electrical and Electronic Information Engineering 1A	○	4	4			Supervisor		
	Seminar on Electrical and Electronic Information Engineering 1B	○	2			2	Supervisor		
	Thesis Research on Electrical and Electronic Information Engineering	○	6	9			Supervisor		
Elective	Material Science for Electronics 1		2			1	H. Uchida T. Yatsui Y. Nakamura G. Kawamura		
	Material Science for Electronics 2		2	1			H. Uchida T. Yatsui Y. Nakamura G. Kawamura		
	Physics for Electronics 1		2			1	A. Matsuda T. Hattori R. Kato		
	Physics for Electronics 2		2		1		A. Matsuda T. Hattori R. Kato		
	Electrical Energy Systems 1		2			1	N. Hozumi H. Takikawa		
	Electrical Energy Systems 2		2	1			N. Hozumi H. Takikawa		
	Electrical Technology and Materials 1		2			1	R. Inada Y. Murakami T. Harigai		
	Electrical Technology and Materials 2		2		1		R. Inada Y. Murakami T. Harigai		
	Semiconductor Physics 1		2			1	A. Wakahara H. Okada T. Kawano K. Takahashi		
	Semiconductor Physics 2		2	1			A. Wakahara H. Okada T. Kawano K. Takahashi		
	LSI Process 1		2			1	K. Sawada Y. Ishikawa H. Sekiguchi T. Noda		
	LSI Process 2		2		1		K. Sawada Y. Ishikawa H. Sekiguchi T. Noda		
	Information and Communication Technology 1		2			1	H. Uehara K. Takeuchi		
	Information and Communication Technology 2		2		1		H. Uehara K. Takeuchi		
	Advanced Electronic Information System 1		2			1	S. Ichikawa M. Tamura		
	Advanced Electronic Information System 2		2	1			S. Ichikawa M. Tamura		
	Methodology of R & D 1		2	1		(1)	Supervisor		
Methodology of R & D 2		2		1	(1)	Supervisor			

◆ Those subjects whose numbers marked with "()" will be held every year.

Computer Science and Engineering

2021.10

Compulsory / Elective	Subject Name	Excluded from GPA	Credits	Classes/Week				Instructor	note	
				1st grade						2nd grade
				Fall 1	Fall 2	Spring 1	Spring 2			
				2021.10 - 2022.3		2022.4 - 2022.9				2022.10 - 2023.9
Compulsory	Seminar on Computer Science and Engineering I	○	4	4				Supervisor		
	Seminar on Computer Science and Engineering II	○	2					2	Supervisor	
	Thesis Research on Computer Science and Engineering	○	6	9				Supervisor		
Elective	Data Science and Analysis 1		1	1			(0.5)	T. Akiba		
	Data Science and Analysis 2		1		1		(0.5)	M. Aono S. Kuriyama		
	Networking, Advanced 1		1	1				K. Umemura		
	Networking, Advanced 2		1		1			R. Ohmura		
	Robotic Perception and Human-Robot Interaction 1		1	1			(0.5)	J. Miura		
	Robotic Perception and Human-Robot Interaction 2		1		1		(0.5)	N. Ohshima R. Ohmura		
	Information Visualization		1				0.5	S. Kuriyama		
	Computers and Education		2			1		K. Kawai		
	3D Vision Computation 1		1	1			(0.5)	Y. Kanazawa		
	3D Vision Computation 2		1		1		(0.5)	Y. Sugaya		
	Algorithm Engineering, Advanced		1				0.5	T. Fujito		
	Molecular Simulation 1		1			1		N. Kurita		
	Molecular Simulation 2		1				1	H. Goto		
	Computational Intelligence in Brain System		1			1	(0.5)	K. Murakoshi		
	Advanced System and Knowledge Sciences		1	1			0.5	Y. Ishida		
	Human Sensation and Perception 1		1	1			(0.5)	S. Nakauchi		
	Human Sensation and Perception 2		1		1		(0.5)	K. Koida		
	Information Security		1				0.5	K. Suzuki		
	Auditory System and Sound Perception		1				0.5	T. Matsui		
	Statistical Machine Learning Theory		1				1	K. Watanabe		
X Reality and Psychology 1		1	1			(0.5)	M. Kitazaki			
X Reality and Psychology 2		1		1		(0.5)	T. Matsui T. Minami			

◆ Those subjects whose numbers marked with "()" will be held every year.

◆ "0.5" signifies that this subject will be held in any one of a quarter term (Spring 1, Spring 2, Fall 1 or Fall 2).

Compulsory / Elective	Subject Name	Excluded from GPA	Credits	Classes/Week				Instructor	note
				1st grade			2nd grade		
				Fall 1	Fall 2	Spring 1			
				2021.10 - 2022.3	2022.4 - 2022.9	2022.10 - 2023.9			
Compulsory	Seminar on Applied Chemistry and Life Science 1	○	3	3			Supervisor		
	Seminar on Applied Chemistry and Life Science 2	○	3			3	Supervisor		
	Thesis Research on Applied Chemistry and Life Science	○	6	9			Supervisor		
Elective	Advanced Separation Chemistry		1			0.5	Y. Saito		
	X-ray Spectroscopy for Catalytic Engineering		1			1	T. Mizushima		
	Applied Physical Chemistry		1			0.5	A. Matsumoto		
	Advanced Polymer Chemistry		1	1			N. Haraguchi		
	Advanced Polymer Engineering		1		1		E. Yoshida		
	Special Topics in Applied Organic Chemistry		1		1		K. Shibatomi		
	Developmental Neuroscience		1			1 (0.5)	R. Numano S. Yoshida		
	Advanced Molecular Life Science		1			0.5	T. Tanaka		
	Advanced Genomics		1			0.5	T. Eki		
	Advanced Reactive Plasma		1			0.5	K. Takashima		
	Advanced Biomaterials Engineering		1			1 (0.5)	H. Tsuji R. Tero		
	Advanced Reaction Engineering		1		1		T. Oguchi		
	Advanced Supercritical Fluid Engineering		1			0.5	H. Daimon		
	Applied Environmental Biology		1	1			A. Nakabachi		
	※ Advanced Molecular Design Chemistry 1		2	1		(1)	Supervisor		
	※ Advanced Molecular Design Chemistry 2		2		1	(1)	Supervisor		
	※ Advanced Molecular Functional Chemistry 1		2	1		(1)	Supervisor		
	※ Advanced Molecular Functional Chemistry 2		2		1	(1)	Supervisor		
	※ Advanced Molecular Biological Chemistry 1		2	1		(1)	Supervisor		
※ Advanced Molecular Biological Chemistry 2		2		1	(1)	Supervisor			

◆ Up to two subjects marked with ※ can be acquired. Consult your supervisor about details.

◆ Those subjects whose numbers marked with "()" will be held every year.

◆ "0.5" signifies that this subject will be held in any one of a quarter term (Spring 1, Spring 2, Fall 1 or Fall 2).

Architecture and Civil Engineering

2021.10

Compulsory / Elective	Subject Name	Excluded from GPA	Credits	Classes/Week			Instructor	note	
				1st grade		2nd grade			
				Fall 1	Fall 2				Spring 1
				2021.10 - 2022.3	2022.4 - 2022.9	2022.10 - 2023.9			
Compulsory	Seminar on Architecture and Civil Engineering I	○	3	3			Supervisor		
	Seminar on Architecture and Civil Engineering II	○	3			3	Supervisor		
	Thesis Research on Architecture and Civil Engineering	○	6	1			Supervisor		
Elective	Elasticity and Stability		2	1			Y. Matsumoto		
	Finite Element Method for Continua and Bar Structures		2			1	S. Nakazawa		
	Seismic Evaluation of Existing Buildings		2		1		T. Matsui		
	Seismic Design of Structures		2	1		(1)	T. Saito		
	Geotechnical Analysis		2			1	K. Miura		
	Geohazards		2	1			T. Matsuda		
	Building Science: Indoor Air Quality and Ventilation		2		1		Y. Shimazaki		
	Coastal Hydraulics		2	1			S. Kato		
	Water Environment Engineering		2		1	(1)	T. Inoue K. Yokota		
	Environmental Control in Biology		2	1			K. Takayama T. Tokairin		
	Advanced Study on Housing System and Housing Policy		2			1	S. Matsushima		
	Advanced Urban Planning		2		1		J. Asano H. Ono		
	Advanced Architectural Design		2		1		A. Mizutani		
	Advanced Transportation and Urban Planning		2		1		N. Sugiki		
	Advanced Computational and Environmental Economics		2		1		H. Shibusawa		
	Advanced Transportation Engineering		2			1	K. Matsuo		
	※ Advanced Structural System Planning and Design I		2	1		(1)	Supervisor		
	※ Advanced Structural System Planning and Design II		2		1	(1)	Supervisor		
	※ Advanced Environmental System Planning and Design I		2	1		(1)	Supervisor		
	※ Advanced Environmental System Planning and Design II		2		1	(1)	Supervisor		
※ Advanced Regional System Planning and Design I		2	1		(1)	Supervisor			
※ Advanced Regional System Planning and Design II		2		1	(1)	Supervisor			

◆ Up to two subjects marked with ※ can be acquired. Consult your supervisor about details.

◆ Those subjects whose numbers marked with "()" will be held every year.

Twinning Program
Double Degree Program
Imaging and Light in Extended Reality
Program
Course Requirement Guide Book
(October 2021)

International Master's Degree Program



I Requirements for completion

1. Requirements for completion

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General subjects	6	
Specialized subjects		
Mechanical Engineering	24	
Electrical and Electronic Information Engineering	24	
Computer Science and Engineering	24	
Applied Chemistry and Life Science	24	
Architecture and Civil Engineering	24	
Grand total	30	

For students in the Twinning Program and also the Double Degree Program, up to 15 credits that the students had acquired at their home university before coming to TUT can be transferred to TUT Master's Program only if TUT admits after being examined. Those 15 credits shall be determined by TUT's criteria. However, credit transfer for compulsory courses will not be accepted.

2. Application for degree

Only a student who has gained the credits required for completion, or who is expected to acquire the required credits can apply for the master's degree. Degree application and procedures for submission of a thesis for a master's degree shall be posted on a bulletin board before the submission period.

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1. Class registration method

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*Classes cannot be registered for nor withdrawn from after the designated registration period. Classes with no registration will not be accredited in any case.

NOTES

- 1) If the student does not attend the classes nor take the examinations, credits will not be given even if the registration is made.
- 2) A student cannot re-register for a subject once credits are given.
- 3) Only one subject can be registered for in a given time schedule. Note that this does not apply to subjects being repeated for examinations only, or intensive subjects.

(3) Confirming and amending the registration

To confirm or amend class registration, students should access "KYOMU JOHO SYSTEM", and follow the manual's instructions.

(4) Repeating classes

In principal, a student who has failed a subject with regular examinations or has not gained credits for some other reasons can take the same subject again in the next academic year. To repeat a subject, the student must register again.

(5) Repeating classes by examination

When a subject instructor approves a student's credits by allowing examination without re-attending the classes, the student can register for the subject using the form "Application for Registration for Repeating Subjects (by Examination)".

*Only the subjects failed with "D" grade are eligible for this.

2. Examination

Examinations include regular examinations and make-up examinations.

(1) Regular examination

In principle regular examinations shall be held during the set period at the end of each term.

All students are to check the examination schedule in the academic calendar at "KYOMU JOHO SYSTEM" or on the bulletin boards. Note that examinations may be held at any time found necessary by the subject instructor.

(2) Make-up examination

1) Make-up examinations shall be held only when a student cannot take the regular examination for one of the following reasons. The student must gain the approval of the subject instructor using the form "Request for a make-up examination".

- a) Illness (doctor's medical certificate must be submitted)
- b) Accidents, disaster (certificate must be submitted), or other special reason (a letter explaining the reason must be submitted)

2) "Request for a make-up examination" must be submitted to the Educational Affairs Division within one week from the final date of the regular examination.

3) If a student fails to take the make-up examination, further examinations will not be allowed.

(3) Recognition of Credits and Grading System

Course instructors recognize credits for courses based on the results of examinations, etc.

① Student performance is graded based on the following standards. S, A, B and C are passing grades while D is a failing grade. Credits are awarded to grade C and above.

- S···90 to 100 points
- A···80 to 89 points
- B···70 to 79 points
- C···60 to 69 points
- D···59 points or less

② With the aim of making course grades internationally compatible, TUT has launched a Grade Point Average (GPA) system, providing a barometer to judge the overall performance of students, starting with students who entered TUT in academic year 2018. The objectives of the GPA system are to fairly grade performance and to enhance students' desire for study by calculating the point average as a barometer to indicate the state and results of students' academic performance.

Grade	Points	Description of Grade	Judgement	Grade Point
S	90 to 100 points	Excellent—Outstanding performance	Pass	4.0
A	80 to 89 points	Good—Excellent performance		3.0
B	70 to 79 points	Satisfactory—Generally sound performance		2.0
C	60 to 69 points	Sufficient—Performance meeting the minimum passing criteria		1.0
D	59 points or less	Failure	Failure	0.0
N	-	Course for credit recognition (not included in GPA)	Pass (Recognition)	N/A
H	-	Abandoned course (Course the student abandoned by continuing to miss the class or no taking an examination without cancelling the registration)	Abandonment	0.0
K	-	Invalidated grade due to misconduct	Invalid	0.0

GPA is an average calculated by converting above letter grades to grade points (GP) ranging from 0.0 to 4.0, multiplying these grade points by the number of credits for each course, and then dividing the total grade points by the total amount of registered credits.

Note, however, that grades from the following courses cannot be used to calculate GPA. Such courses are marked with a hyphen in the GP column of the grade report.

- (1) Courses for which credits were earned on the basis of the credit exchange system conducted with other universities, graduate schools, etc.; courses that were registered at other universities or junior colleges while enrolled in TUT; and courses that were registered at universities, junior colleges or graduate schools in foreign countries
- (2) Courses for which credits were earned before entering TUT and were recognized after entering TUT; courses that were registered at TUT, other universities or junior colleges before entering TUT; and courses registered at universities, junior colleges or graduate schools in foreign countries (including courses registered for as a credited auditor student)
- (3) Courses for which credits were earned through mid-course entry, interschool transfer, readmission, or studying abroad, and were subsequently recognized
- (4) Courses for which credits cannot be counted toward graduation requirements; and courses for which credits were earned through the system for advance registration to graduate school programs
- (5) Courses that are designated separately by each department (On-the-job Training (internships), Supervised Research, Seminars, experimental courses, and practical training courses)

- ③ Each student can check grades and GPA for recognized credits in the "KYOMU JOHO SYSTEM".

(4) System for appealing grades

Students who have concerns about their grades for a particular semester should inquire from the class instructor. If students have complaints regarding the instructor's response, they can submit an appeal. Students, however, cannot appeal the reason or basis for the grade.

Students should contact the Educational Affairs Division for details.

3. Maximum years of attendance and related matters

(1) Maximum years of attendance

A student may not be in the master's twinning course at the university for more than two years.

(2) Leave of absence

If a student cannot attend classes for two or more months consecutively due to illness or other special reasons, the student may submit the form "Request for leave of absence" to the Educational Affairs Division after getting approval from the supervisor, a member of the academic affairs committee, and their department head. Upon approval by the President, the student can take a leave of absence (maximum two years in total).

The period of this absence will not be counted in the "Maximum years of attendance" mentioned in paragraph (1) above.

To return to school after the approved period ends, the student must submit the form "Notice of return to university".

To return to school before the approved period following the removal of cause of absence, the student must submit the form "Application for return to university" and obtain approval.

(3) Withdrawal

If a student wants to withdraw from the university, the student must submit the form "Application for withdrawal from university" to the Educational Affairs Division after getting the approval from the supervisor, a member of the academic affairs committee, and their department head. Upon approval by the President, the student can withdraw from the university.

Note that the tuition fee has to be paid in full even if the student withdraws in the middle of a term.

(4) Removal from the University



A student will be removed from the university for the following reason.

- 1) A student exceeds the period mentioned above in paragraph (1) "Maximum years of attendance".
- 2) A student cannot return to school after the period of absence mentioned above in paragraph (2) "Leave of absence".
- 3) A student dies, or disappears.
- 4) A student who has been approved for half exemption or postponement of admission fee payment and does not pay the admission fee by the designated date.
- 5) A student fails to pay the tuition and does not pay even after a warning.

4. Other matters

(1) Information about canceled or make-up classes

All students are requested to double-check their class schedules and other information using the following means:

Location		information
TUT website	https://kyomu.office.tut.ac.jp/portal/Public/Board/BoardList.aspx 	Canceled or make-up classes
TUT website for mobile phones	https://kyomu.office.tut.ac.jp/mobile/Main.aspx *Mobile tagging by camera phones 	Canceled or make-up classes

(2) Classes/exams when a **STORM WARNING** is announced.

If a Storm Warning (*Bo-fu Keiho*) is announced for Toyohashi city or the South-east area of the Mikawa region, TUT will deal with classes or examinations as follows:

- 1) To prevent any accident, all classes will be canceled during the Storm Warning.
- 2) If the Storm Warning is cleared before 7:00 am, all classes will be on schedule.
- 3) If the Storm Warning is cleared between 7:00 am and 11:00 am, all classes will start from the 3rd period (*Classes in the 1st and 2nd period will be canceled).
- 4) If the Storm Warning continues after 11:00 am, all classes will be canceled.
*All cancelled classes and examinations will be rescheduled.
- 5) Whether or not a storm warning is announced, classes may be canceled because of suspension of public transportation service or some similar occurrence, at the discretion of the Vice President for Educational Affairs.
- 6) If cancelled classes cannot be held on YOBIBI (optional extra day), and final exams, on the alternate exam day, a Saturday may be used as an alternate day for classes or exams.
- 7) The above shall not apply to remote classes.

(3) University's e-mail account

TUT strongly recommends all students to set up the e-mail forwarding service in order to receive important information of class-scheduling, grading and other communications from the university.

(4) Absence from classes

When you have to be absent from classes due to illness, bereavement or other reasons, you need to inform these reasons to your subject instructor yourself.

Absences will be dealt with at the discretion of subject instructors.

Reasons for Absence	Documents you should submit	Procedure
Illness/Injury	Medical certificate or Medical expense receipts	Students inform lecturers directly
Bereavement leave	Letter or notice of funeral	Students inform lecturers directly
Infectious diseases*	Medical certificate or Medical expense receipts	Students inform Student Affairs Division (0532-44-6553), TUT office staff will report to lecturers.

*TUT may require suspension in order to prevent the spread of infection. Suspension orders will be notified by email from the TUT or KYOMU JOHO SYSTEM.

For student information about the new coronavirus, check the university website or the email from TUT.

III Curriculum

1. Classes and credits

(1) Classes

Classes are divided into General Subjects and Specialized Subjects. Numbers of credits are set for each subject.

(For the subjects to be offered, see the following pages.
See the web syllabus for the details of each subject.)

(2) Compulsory subjects and elective subjects

1) Compulsory subjects are the subjects that must be completed as a requirement of the major.

2) Elective subjects can be selected and taken from those subjects being offered for the designated numbers of credits.

(3) Calculating credits

Teaching types of classes are lectures, exercises, experiments, practical or hands-on training, and they are offered individually or in combinations, and the standard is that it takes 45 hours of study to earn one credit. This is calculated in the following ways.

(a) For lectures, 15 hours of class time and 30 hours of preparation and review for one credit.

(b) For exercises, 30 hours of class time and 15 hours of preparation and review for one credit.

(c) For experiments, practical or hands-on training, 45 hours of class time for 1 credit.

(4) Class times and class schedule.

The following are the class times.

Period	1	2	3	4	5	6
Time	8:50 am– 10:20 am	10:30 am– 12:00 (noon)	1:00 pm– 2:30 pm	2:40 pm 4:10 pm	4:20 pm– 5:50 pm	6:00 pm– 7:30 pm

The class schedule is posted on "KYOMU JOHO SYSTEM" at the beginning of each semester. Notification of changes to the class schedule is also posted.

Courses listed in the "Intensive" section of the class schedule are ones that are taught intensively at irregular times. Once the dates of intensive courses are decided, the information is posted.

(5) School term

A school term is determined according to the academic year calendar, and consists of two terms; Spring term (from April 1 until September 30) and Fall term (from October 1 until March 31)

General subjects (Twinning Program・Double Degree Program)

2021.10

Compulsory / Elective	Subject Name	Excluded from GPA	Credits	Classes/Week		Instructor	note
				Fall	Spring		
				2021.10 - 2022.3	2022.4 - 2022.9		
Compulsory	Ethics for Researchers		1	1			
	Culture and Communication I		2	1		R.Asai	
	Culture and Communication II		2				
	Principles of Japanese Conversation		2		1	Y. Muramatsu	
	Principles of Japanese Grammar		2	1		Y. Yoshimura	
	Japanese Life Today		2		1		
	Japanese Industrial Technologies and Innovations		2	1			

Mechanical Engineering (Twinning Program)

2021.10

Compulsory / Elective	Subject Name	Excluded from GPA	Credits	Classes/Week				Instructor	note
				Fall 1	Fall 2	Spring 1	Spring 2		
				2021.10 - 2022.3		2022.4 - 2022.9			
Compulsory	Seminar on Mechanical Engineering	○	6	6				Supervisor	
	Thesis Research on Mechanical Engineering	○	6	9				Supervisor	
Elective	Vibration Engineering		1			1		S. Kawamura	
	Applied Mechanics of Materials		1					T. Adachi	
	Micromachining Engineering		1		1			T. Shibata	
	Science and Technology of Thin Films		1					M. Izaki	
	Microstructural Control of Metallic Materials		1		1			H. Miura	
	Microstructure and Properties of Structural Materials		1					Y. Todaka	
	Modern Control Engineering		1		1			K. Takagi	
	Precision Mechatronics		1					K. Sato	
	Robot Kinematics		1	1				N. Uchiyama	
	Advanced Agricultural Engineering		1				1	K. Takayama	
	Fluid Power Engineering		1	1				H. Yanada	
	Advanced Aeroacoustics		1					A. Iida	
	Combustion Theory		1		1			Y. Nakamura	
	Microscale Transport Phenomena		1					K. Doi	
	※Advanced Mechanical Systems Design I		2		1			Supervisor	
	※Advanced Mechanical Systems Design II		2				1	Supervisor	
	※Advanced Materials and Manufacturing Process I		2		1			Supervisor	
	※Advanced Materials and Manufacturing Process II		2				1	Supervisor	
	※Advanced System, Control and Robotics I		2		1			Supervisor	
	※Advanced System, Control and Robotics II		2				1	Supervisor	
※Advanced Energy and Environmental Engineering I		2		1			Supervisor		
※Advanced Energy and Environmental Engineering II		2				1	Supervisor		

◆ Up to two subjects marked with ※ can be acquired. Consult your supervisor about details.

Electrical and Electronic Information Engineering (Twinning Program)

2021.10

Compulsory / Elective	Subject Name	Excluded from GPA	Credits	Classes/Week				Instructor	note
				Fall 1	Fall 2	Spring 1	Spring 2		
				2021.10 -2022.3		2022.4 -2022.9			
Compulsory	Seminar on Electrical and Electronic Information Engineering	○	6			6		Supervisor	
	Thesis Research on Electrical and Electronic Information Engineering	○	6			9		Supervisor	
Elective	Material Science for Electronics 1		2					H. Uchida T. Yatsui Y. Nakamura G. Kawamura	
	Material Science for Electronics 2		2	1				H. Uchida T. Yatsui Y. Nakamura G. Kawamura	
	Physics for Electronics 1		2					A. Matsuda T. Hattori R. Kato	
	Physics for Electronics 2		2			1		A. Matsuda T. Hattori R. Kato	
	Electrical Energy Systems 1		2					N. Hozumi H. Takikawa	
	Electrical Energy Systems 2		2	1				N. Hozumi H. Takikawa	
	Electrical Technology and Materials 1		2					R. Inada Y. Murakami T. Harigai	
	Electrical Technology and Materials 2		2			1		R. Inada Y. Murakami T. Harigai	
	Semiconductor Physics 1		2					A. Wakahara H. Okada T. Kawano K. Takahashi	
	Semiconductor Physics 2		2	1				A. Wakahara H. Okada T. Kawano K. Takahashi	
	LSI Process 1		2					K. Sawada Y. Ishikawa H. Sekiguchi T. Noda	
	LSI Process 2		2			1		K. Sawada Y. Ishikawa H. Sekiguchi T. Noda	
	Information and Communication Technology 1		2					H. Uehara K. Takeuchi	
	Information and Communication Technology 2		2			1		H. Uehara K. Takeuchi	
	Advanced Electronic Information System 1		2					S. Ichikawa M. Tamura	
	Advanced Electronic Information System 2		2	1				S. Ichikawa M. Tamura	
Methodology of R & D 1		2	1				Supervisor		
Methodology of R & D 2		2			1		Supervisor		

Computer Science and Engineering(Twinning Program)

2021.10

Compulsory / Elective	Subject Name	Excluded from GPA	Credits	Classes/Week				Instructor	note
				Fall 1	Fall 2	Spring 1	Spring 2		
				2021.10 - 2022.3		2022.4 - 2022.9			
Compulsory	Seminar on Computer Science and Engineering	○	6	6				Supervisor	
	Thesis Research on Computer Science and Engineering	○	6	9				Supervisor	
Elective	Data Science and Analysis 1		1	1				T. Akiba	
	Data Science and Analysis 2		1		1			M. Aono S. Kuriyama	
	Networking, Advanced 1		1	1				K. Umemura	
	Networking, Advanced 2		1		1			R. Ohmura	
	Robotic Perception and Human-Robot Interaction 1		1	1				J. Miura	
	Robotic Perception and Human-Robot Interaction 2		1		1			N. Ohshima R. Ohmura	
	Information Visualization		1					S. Kuriyama	
	Computers and Education		2			1		K. Kawai	
	3D Vision Computation 1		1	1				Y. Kanazawa	
	3D Vision Computation 2		1		1			Y. Sugaya	
	Algorithm Engineering, Advanced		1					T. Fujito	
	Molecular Simulation 1		1			1		N. Kurita	
	Molecular Simulation 2		1				1	H. Goto	
	Computational Intelligence in Brain System		1			1		K. Murakoshi	
	Advanced System and Knowledge Sciences		1	1				Y. Ishida	
	Human Sensation and Perception 1		1	1				S. Nakauchi	
	Human Sensation and Perception 2		1		1			K. Koida	
	Information Security		1					K. Suzuki	
	Auditory System and Sound Perception		1					T. Matsui	
	Statistical Machine Learning Theory		1				1	K. Watanabe	
X Reality and Psychology 1		1	1				M. Kitazaki		
X Reality and Psychology 2		1		1			T. Matsui T. Minami		

Compulsory / Elective	Subject Name	Excluded from GPA	Credits	Classes/Week				Instructor	note
				Fall 1	Fall 2	Spring 1	Spring 2		
				2021.10 - 2022.3		2022.4 - 2022.9			
Compulsory	Seminar on Applied Chemistry and Life Science	○	6	6				Supervisor	
	Thesis Research on Applied Chemistry and Life Science	○	6	9				Supervisor	
Elective	Advanced Separation Chemistry		1					Y. Saito	
	X-ray Spectroscopy for Catalytic Engineering		1				1	T. Mizushima	
	Applied Physical Chemistry		1					A. Matsumoto	
	Advanced Polymer Chemistry		1	1				N. Haraguchi	
	Advanced Polymer Engineering		1		1			E. Yoshida	
	Special Topics in Applied Organic Chemistry		1			1		K. Shibatomi	
	Developmental Neuroscience		1				1	R. Numano S. Yoshida	
	Advanced Molecular Life Science		1					T. Tanaka	
	Advanced Genomics		1					T. Eki	
	Advanced Reactive Plasma		1					K. Takashima	
	Advanced Biomaterials Engineering		1				1	H. Tsuji R. Tero	
	Advanced Reaction Engineering		1			1		T. Oguchi	
	Advanced Supercritical Fluid Engineering		1					H. Daimon	
	Applied Environmental Biology		1	1				A. Nakabachi	
	※ Advanced Molecular Design Chemistry 1		2	1				Supervisor	
	※ Advanced Molecular Design Chemistry 2		2			1		Supervisor	
	※ Advanced Molecular Functional Chemistry 1		2	1				Supervisor	
	※ Advanced Molecular Functional Chemistry 2		2			1		Supervisor	
※ Advanced Molecular Biological Chemistry 1		2	1				Supervisor		
※ Advanced Molecular Biological Chemistry 2		2			1		Supervisor		

◆ Up to two subjects marked with ※ can be acquired. Consult your supervisor about details.

Architrcture and Civil Engineering (Twinning Program)

2021.10

Compulsory / Elective	Subject Name	Excluded from GPA	Credits	Classes/Week				Instructor	note
				Fall 1	Fall 2	Spring 1	Spring 2		
				2021.10 - 2022.3		2022.4 - 2022.9			
Compulsory	Seminar on Architecture and Civil Engineering	○	6			6		Supervisor	
	Thesis Research on Architecture and Civil Engineering	○	6			9		Supervisor	
Elective	Elasticity and Stability		2	1				Y. Matsumoto	
	Finite Element Method for Continua and Bar Structures		2					S. Nakazawa	
	Seismic Evaluation of Existing Buildings		2			1		T. Matsui	
	Seismic Design of Structures		2	1				T. Saito	
	Geotechnical Analysis		2					K. Miura	
	Geohazards		2	1				T. Matsuda	
	Building Science: Indoor Air Quality and Ventilation		2			1		Y. Shimazaki	
	Coastal Hydraulics		2	1				S. Kato	
	Water Environment Engineering		2			1		T. Inoue K. Yokota	
	Environmental Control in Biology		2	1				K. Takayama T. Tokairin	
	Advanced Study on Housing System and Housing Policy		2					S. Matsushima	
	Advanced Urban Planning		2			1		J. Asano H. Ono	
	Advanced Architectural Design		2			1		A. Mizutani	
	Advanced Transportation and Urban Planning		2			1		N. Sugiki	
	Advanced Computational and Environmental Economics		2			1		H. Shibusawa	
	Advanced Transportation Engineering		2					K. Matsuo	
	※ Advanced Structural System Planning and Design I		2	1				Supervisor	
	※ Advanced Structural System Planning and Design II		2			1		Supervisor	
	※ Advanced Environmental System Planning and Design I		2	1				Supervisor	
	※ Advanced Environmental System Planning and Design II		2			1		Supervisor	
※ Advanced Regional System Planning and Design I		2	1				Supervisor		
※ Advanced Regional System Planning and Design II		2			1		Supervisor		

◆ Up to two subjects marked with ※ can be acquired. Consult your supervisor about details.

Mechanical Engineering (Double Degree Program)

2021.10

Compulsory / Elective	Subject Name	Excluded from GPA	Credits	Classes/Week				Instructor	note
				Fall 1	Fall 2	Spring 1	Spring 2		
				2021.10 - 2022.3		2022.4 - 2022.9			
Compulsory	Seminar on Mechanical Engineering I	○	4	4				Supervisor	
	Seminar on Mechanical Engineering II	○	2	2				Supervisor	
	Thesis Research on Mechanical Engineering	○	6	9				Supervisor	
	Internship	○	—	12				Supervisor	
Elective	Advances in Mechanical Design		2		1			S. Kawamura T. Shibata	
	Advances in Material Science and Manufacturing		2						
	Advances in Thermal and Fluid Mechanics		2	1				H. Yanada Y. Nakamura	
	Advances in Systems, Control and Robotics		2		1(*)			K. Takagi K. Takayama	
	Robotics		2	1				N. Uchiyama	

(*)Signifies that this subject will be held in any two of the three quarter terms.

Computer Science and Engineering(Double Degree Program)

2021.10

Compulsory / Elective	Subject Name	Excluded from GPA	Credits	Classes/Week				Instructor	note
				Fall 1	Fall 2	Spring 1	Spring 2		
				2021.10 - 2022.3		2022.4 - 2022.9			
Compulsory	Seminar on Computer Science and Engineering	○	6	6				Supervisor	
	Thesis Research on Computer Science and Engineering	○	6	9				Supervisor	
Elective	Data Science and Analysis 1		1	1				T. Akiba	
	Data Science and Analysis 2		1		1			M. Aono S. Kuriyama	
	Networking, Advanced 1		1	1				K. Umemura	
	Networking, Advanced 2		1		1			R. Ohmura	
	Robotic Perception and Human-Robot Interaction 1		1	1				J. Miura	
	Robotic Perception and Human-Robot Interaction 2		1		1			N. Ohshima R. Ohmura	
	Information Visualization		1					S. Kuriyama	
	Computers and Education		2			1		K. Kawai	
	3D Vision Computation 1		1	1				Y. Kanazawa	
	3D Vision Computation 2		1		1			Y. Sugaya	
	Algorithm Engineering, Advanced		1					T. Fujito	
	Molecular Simulation 1		1			1		N. Kurita	
	Molecular Simulation 2		1				1	H. Goto	
	Computational Intelligence in Brain System		1			1		K. Murakoshi	
	Advanced System and Knowledge Sciences		1	1				Y. Ishida	
	Human Sensation and Perception 1		1	1				S. Nakauchi	
	Human Sensation and Perception 2		1		1			K. Koida	
	Information Security		1					K. Suzuki	
	Auditory System and Sound Perception		1					T. Matsui	
	Statistical Machine Learning Theory		1				1	K. Watanabe	
X Reality and Psychology 1		1	1				M. Kitazaki		
X Reality and Psychology 2		1		1			T. Matsui T. Minami		

General subjects (IMLEX Program)

2021.10

Compulsory / Elective	Subject Name	Excluded from GPA	Credits	Classes/Week		Instructor	note
				Fall	Spring		
				2021.10 - 2022.3	2022.4 - 2022.9		
Compulsory	Ethics for Researchers		1	1			
	Japanese Communication Theory		2	1		C. Ishikawa	
Elective	Culture and Communication I		2	1		R.Asai	
	Culture and Communication II		2				
	Japanese Life Today		2		1		
	Japanese Industrial Technologies and Innovations		2	1			

Compulsory / Elective	Subject Name	Excluded from GPA	Credits	Classes/Week				Instructor	note
				Fall 1	Fall 2	Spring 1	Spring 2		
				2021.10 - 2022.3		2022.4 - 2022.9			
Compulsory	Case Study in Imaging and Light and XR	○	4	4				Supervisor	IMLEX Core Courses
	Advanced Research Methods	○	2	2				Supervisor	IMLEX Core Courses
	Supervised Research in Computer Science and Engineering	○	6			9		Supervisor	IMLEX Core Courses
	Data Science and Analysis 1		1	1				T. Akiba	IMLEX Core Courses
	Data Science and Analysis 2		1		1			S. Kuriyama	IMLEX Core Courses
Elective Required	Human Sensation and Perception 1		1	1				S. Nakauchi	IMLEX Compulsory in Lighting Track
	Human Sensation and Perception 2		1		1			K. Koida	IMLEX Compulsory in Lighting Track
	X Reality and Psychology 1		1	1				M. Kitazaki	IMLEX Compulsory in Lighting Track
	X Reality and Psychology 2		1		1			T. Matsui T. Minami	IMLEX Compulsory in Lighting Track
	3D Vision Computation 1		1	1				Y. Kanazawa	IMLEX Compulsory in Computational Imaging Track
	3D Vision Computation 2		1		1			Y. Sugaya	IMLEX Compulsory in Computational Imaging Track
	Robotic Perception and Human-Robot Interaction 1		1	1				J. Miura	IMLEX Compulsory in Computational Imaging Track
	Robotic Perception and Human-Robot Interaction 2		1		1			N. Ohshima R. Ohmura	IMLEX Compulsory in Computational Imaging Track
Elective	Networking, Advanced 1		1	1				K. Umemura	
	Networking, Advanced 2		1		1			R. Ohmura	
	Information Visualization		1					S. Kuriyama	
	Computers and Education		2			1		K. Kawai	
	Algorithm Engineering, Advanced		1					T. Fujito	
	Molecular Simulation 1		1			1		N. Kurita	
	Molecular Simulation 2		1				1	H. Goto	
	Computational Intelligence in Brain System		1			1		K. Murakoshi	
	Advanced System and Knowledge Sciences		1	1				Y. Ishida	
	Information Security		1					K. Suzuki	
	Auditory System and Sound Perception		1					T. Matsui	
	Statistical Machine Learning Theory		1				1	K. Watanabe	

Course Requirement Guide Book

(October 2021)

International Doctoral Degree Program



TOYOHASHI
UNIVERSITY OF TECHNOLOGY

1-1 Hibarigaoka Tenpaku-cho Toyohashi-shi Aichi 441-8580, JAPAN

I Requirements for completion

1. Requirements for completion

To complete the doctoral course, a student must participate in the course for three or more years, and must obtain the minimum credits required as follows. A student must carry out a research program under proper guidance by faculty members. In addition a student must submit a doctoral thesis, and must pass a review and final examination.

Note that students showing excellent achievement may finish in a shorter study period.

Classification	Required credits for completion	Remarks
Mechanical Engineering	12	4 credits in total can be substituted with a combination of the following options , with permission from the student's supervisor. 1. Specialized subjects from International Master's Degree Program (except for Advanced subjects) 2. Subjects of other department from International Doctoral Degree Program 3. Subjects from doctoral program of student's own department held in Japanese (The same subject cannot be taken in both Japanese and English)
Electrical and Electronic Information Engineering	12	
Computer Science and Engineering	12	
Applied Chemistry and Life Science	12	
Architecture and Civil Engineering	12	

2. Application for degree

Only a student who has gained the credits required for completion, or who is expected to gain the required credits can apply for the doctoral degree. Degree application and procedures for submission of a thesis for a doctoral degree shall be posted on a bulletin board before the submission period.

II Class registration, examination, and attendance period

1. Class registration method

Classes shall be registered according to the program schedule of the student's respective major.

(1) Making study plans

To make study plans, the student should read this Guide Book thoroughly, and follow the instructions and advice given during the orientation and by the supervisor.

The Course Schedule is provided at the beginning of each academic year.
Schedules for intensive classes will be posted at "KYOMU JOHO SYSTEM" and on a bulletin board when the details are fixed.

(2) Class registration

Students must register for classes using "KYOMU JOHO SYSTEM" at the TUT website

<https://kyomu.office.tut.ac.jp/portal/>

or by the form "Application for Subjects" during the designated period.

*Classes cannot be registered for nor withdrawn from after the designated registration period. Classes with no registration will not be accredited in any case.

NOTES

1) To take Specialized subjects from International Master's Degree Program (except for Advanced topics subjects), subjects from your own department held in Japanese, or other department's subjects from International Doctoral Degree Program, Students must obtain approval from their supervisor and the subject instructor with the form "Application for Registration in Subjects in Other Department".

2) If the student does not attend the classes nor take the examinations, credits will not be given even if the registration is made.

3) A student cannot re-register for a subject for which credits are given.

4) Only one subject can be registered for in a given time schedule. Note that this does not apply to subjects being repeated for intensive subjects.

(3) Confirming and amending the registration

To confirm or amend class registration, students should access "KYOMU JOHO SYSTEM", and follow the manual's instructions.

(4) Repeating classes

In principal, a student who has failed a subject with regular examinations or has not gained credits for some other reason can take the same subject again in the next academic year. To repeat a subject, the student must register again.

2. Examination

Examination includes regular examinations and make-up examinations.

(1) Regular examination

In principle regular examinations shall be held during the set period at the end of each term.

All students are to check the examination schedule in the academic calendar at "KYOMU JOHO SYSTEM" or on the bulletin boards. Note that examinations may be held at any time found necessary by the subject instructor.

(2) Make-up examination

1) Make-up examinations shall be held only when a student cannot take the regular examination for one of the following reasons. The student must gain the approval of the subject instructor using the form "Request for a make-up examination".

- a) Illness (doctor's medical certificate must be submitted)
- b) Accidents, disaster (certificate must be submitted), or other special reason (a letter explaining the reason must be submitted)

2) "Request for a make-up examination" must be submitted to the Academic Affairs Division within one week from the final date of the regular examination.

3) If a student fails to take the make-up examination, further examinations will not be allowed.

(3) Recognition of Credits and Grading System

Course instructors recognize credits for courses based on the results of examinations, etc.

① Student performance is graded based on the following standards. S, A, B and C are passing grades while D is a failing grade. Credits are awarded to grade C and above.

S···90 to 100 points

A···80 to 89 points

B···70 to 79 points

C···60 to 69 points

D···59 points or less

② With the aim of making course grades internationally compatible, TUT has launched a Grade Point Average (GPA) system, providing a barometer to judge the overall performance of students, starting with students who entered TUT in academic year 2018. The objectives of the GPA system are to fairly grade performance and to enhance students' desire for study by calculating the point average as a barometer to indicate the state and results of students' academic performance.

Grade	Points	Description of Grade	Judgement	Grade Point
S	90 to 100 points	Excellent—Outstanding performance	Pass	4.0
A	80 to 89 points	Good—Excellent performance		3.0
B	70 to 79 points	Satisfactory—Generally sound performance		2.0
C	60 to 69 points	Sufficient—Performance meeting the minimum passing criteria		1.0
D	59 points or less	Failure	Failure	0.0
N	-	Course for credit recognition (not included in GPA)	Pass (Recognition)	N/A
H	-	Abandoned course (Course the student abandoned by continuing to miss the class or no taking an examination without cancelling the registration)	Abandonment	0.0
K	-	Invalidated grade due to misconduct	Invalid	0.0

GPA is an average calculated by converting above letter grades to grade points (GP) ranging from 0.0 to 4.0, multiplying these grade points by the number of credits for each course, and then dividing the total grade points by the total amount of registered credits.

Note, however, that grades from the following courses cannot be used to calculate GPA. Such courses are marked with a hyphen in the GP column of the grade report.

(1) Courses for which credits were earned on the basis of the credit exchange system conducted with other universities, graduate schools, etc.; courses that were registered at other universities or junior colleges while enrolled in TUT; and courses that were registered at universities, junior colleges or graduate schools in foreign countries

(2) Courses for which credits were earned before entering TUT and were recognized after entering TUT; courses that were registered at TUT, other universities or junior colleges before entering TUT; and courses registered at universities, junior colleges or graduate schools in foreign countries (including courses registered for as a credited auditor student)

(3) Courses for which credits were earned through mid-course entry, interschool transfer, readmission, or studying abroad, and were subsequently recognized

(4) Courses for which credits cannot be counted toward graduation requirements; and courses for which credits were earned through the system for advance registration to graduate school programs

(5) Courses that are designated separately by each department (On-the-job Training (internships), Supervised Research, Seminars, experimental courses, and practical training courses)

- ③ Each student can check grades and GPA for recognized credits in the "KYOMU JOHO SYSTEM".

(4) System for appealing grades

Students who have concerns about their grades for a particular semester should inquire from the class instructor. If students have complaints regarding the instructor's response, they can submit an appeal. Students, however, cannot appeal the reason or basis for the grade.

Students should contact the Educational Affairs Division for details.

3. Maximum years of attendance and related matters

(1) Maximum years of attendance

A student may not be in the doctoral course at the university for more than six years.

(2) Leave of absence

If a student cannot attend classes for two or more months consecutively due to illness or other special reasons, the student may submit the form "Request for leave of absence" to the Educational Affairs Division after getting approval from the supervisor, a member of the academic affairs committee, and their department head. Upon approval by the President, the student can take a leave of absence (maximum two years in total).

The period of this absence will not be counted in the "Maximum years of attendance" mentioned in paragraph (1) above.

To return to school after the approved period ends, the student must submit the form "Notice of return to university".

To return to school before the approved period following the removal of the cause of absence, the student must submit the form "Application for return to university" and obtain approval.

(3) Withdrawal

If a student wants to withdraw from the university, the student must submit the form "Application for withdrawal from university" to the Educational Affairs Division after getting approval from the supervisor, a member of the academic affairs committee, and the department head. Upon approval by the President, the student can withdraw from the university.

Note that the tuition fee has to be paid in full even if the student withdraws in the middle of a term.

(4) Removal from the University



A student will be removed from the university for the following reason.

- 1) A student exceeds the period mentioned above in paragraph (1) "Maximum years of attendance".
- 2) A student cannot return to school after the period of absence mentioned above in paragraph (2) "Leave of absence".
- 3) A student dies, or disappears.
- 4) A student who has been approved for half exemption or postponement of admission fee payment and does not pay the admission fee by the designated date.
- 5) A student fails to pay the tuition and does not pay even after a warning.

4. Other matters

(1) Information about canceled or make-up classes

All students are requested to double-check their class schedules and other information using the following means:

Location		information
TUT website	https://kyomu.office.tut.ac.jp/portal/Public/Board/BoardList.aspx 	Canceled or make-up classes
TUT website for mobile phones	https://kyomu.office.tut.ac.jp/mobile/Main.aspx  *Mobile tagging by camera phones	Canceled or make-up classes

(2) Classes/exams when a **STORM WARNING** is announced.

If a Storm Warning (*Bo-fu Keiho*) is announced for Toyohashi city or the South-east area of the Mikawa region, TUT will deal with classes or examinations as follows:

- 1) To prevent any accident, all classes will be canceled during the Storm Warning.
- 2) If the Storm Warning is cleared before 7:00 am, all classes will be on schedule.
- 3) If the Storm Warning is cleared between 7:00 am and 11:00 am, all classes will start from the 3rd period (*Classes in the 1st and 2nd period will be canceled).
- 4) If the Storm Warning continues after 11:00 am, all classes will be canceled.
*All cancelled classes and examinations will be rescheduled.
- 5) Whether or not a storm warning is announced, classes may be canceled because of suspension of public transportation service or some similar occurrence, at the discretion of the Vice President for Educational Affairs.
- 6) If cancelled classes cannot be held on YOBIBI (optional extra day), and final exams, on the alternate exam day, a Saturday may be used as an alternate day for classes or exams.
- 7) The above shall not apply to remote classes.

(3) University's e-mail account

TUT strongly recommends all students to set up the e-mail forwarding service in order to receive important information of class-scheduling, grading and other communications from the university.

(4) Absence from classes

When you have to be absent from classes due to illness, bereavement or other reasons, you need to inform these reasons to your subject instructor yourself.

Absences will be dealt with at the discretion of subject instructors.

Reasons for Absence	Documents you should submit	Procedure
Illness/Injury	Medical certificate or Medical expense receipts	Students inform lecturers directly
Bereavement leave	Letter or notice of funeral	Students inform lecturers directly
Infectious diseases*	Medical certificate or Medical expense receipts	Students inform Student Affairs Division (0532-44-6553), TUT office staff will report to lecturers.

*TUT may require suspension in order to prevent the spread of infection.

Suspension orders will be notified by email from TUT or KYOMU JOHO SYSTEM.

For student information about the new coronavirus, check the university website or the email from TUT.

III Curriculum

1. Classes and credits

(1) Classes

Classes in Doctoral program are only Specialized Subjects. Numbers of credits are set for each subject.

(For the subjects to be offered, see the following pages.
See the web syllabus for the details of each subject.)

(2) Compulsory subjects and elective subjects

- 1) Compulsory subjects are the subjects that must be completed as a requirement for the major.
- 2) Elective subjects can be selected and taken from those subjects being offered for the designated numbers of credits.

(3) Calculating credits

Teaching types of classes are lectures, exercises, experiments, practical or hands-on training, and they are offered individually or in combinations, and the standard is that it takes 45 hours of study to earn one credit. This is calculated in the following ways.

- (a) For lectures, 15 hours of class time and 30 hours of preparation and review for one credit.
- (b) For exercises, 30 hours of class time and 15 hours of preparation and review for one credit.
- (c) For experiments, practical or hands-on training, 45 hours of class time for 1 credit.

(4) Class times and class schedule.

The following are the class times.

Period	1	2	3	4	5	6
Time	8:50 am– 10:20 am	10:30 am– 12:00 (noon)	1:00 pm– 2:30 pm	2:40 pm 4:10 pm	4:20 pm– 5:50 pm	6:00 pm– 7:30 pm

The class schedule is posted on "KYOMU JOHO SYSTEM" at the beginning of each semester. Notification of changes to the class schedule is also posted.

Courses listed in the "Intensive" section of the class schedule are ones that are taught intensively at irregular times. Once the dates of intensive courses are decided, the information is posted.

(5) School term

A School term is determined according to the academic year calendar, and consists of two terms; Spring term (from April 1 until September 30) and Fall term (from October 1 until March 31)

Mechanical Engineering
(Doctoral Degree Program)

2021.10

Compulsory / Elective	Subject Name	Excluded from GPA	Credits	Instructor	1st grade		2nd grade	3rd grade	Note
					Fall	Spring			
					2021.10 - 2022.3	2022.4 - 2022.9	2022.10 - 2023.9	2023.10 - 2024.9	
Compulsory	Advanced Seminar on Mechanical Engineering 1	○	4	Supervisor	4				
	Advanced Seminar on Mechanical Engineering 2	○	1	Supervisor			1		
	Seminar on Interdisciplinary Research		1				1		
Elective Required	Ethics for Researchers		1		1				※1
Elective	Advanced Mechanical Systems		2	S. Kawamura T. Adachi Y. Takeichi M. Matsubara		1			
	Advanced Production Processes		2	T. Shibata Y. Abe M. Nagai	1				
	Advanced Manufacturing Processes		2	M. Izaki S. Yokoyama T. Yasui		1			
	Advanced Materials Science		2	H. Miura Y. Todaka M. Kobayashi	1				
	Advanced Mechatronics		2	K. Sato K. Takagi S. Sano		1			
	Advanced Systems and Instrumentation Engineering		2	N. Uchiyama K. Takayama T. Mashimo	1				
	Advanced Energy Engineering		2	Y. Nakamura K. Doi T. Suzuki T. Matsuoka		1			
	Advanced Environmental Engineering		2	H. Yanada A. Iida N. Sekishita H. Yokoyama	1				

※1 Students who have obtained the credit of this subject during Master's program must take another subject among subject in the doctoral program

Electrical and Electronic Information Engineering
(Doctoral Degree Program)

2021.10

Compulsory / Elective	Subject Name	Excluded from GPA	Credits	Instructor	1st grade		2nd grade	3rd grade	Note
					Fall	Spring			
					2021.10 - 2022.3	2022.4 - 2022.9	2022.10 - 2023.9	2023.10 - 2024.9	
Compulsory	Seminar on Electrical and Electronic Information Engineering 2	○	4	Supervisor	4				
	Seminar on Electrical and Electronic Information Engineering 3	○	1	Supervisor			1		
	Seminar on Interdisciplinary Research		1				1		
Elective Required	Ethics for Researchers		1		1				※1
Elective	Advanced Electronic Materials 1		2	H. Uchida T. Yatsui Y. Nakamura G. Kawamura		1			
	Advanced Electronic Materials 2		2	A. Matsuda T. Hattori R. Kato	1				
	Advanced Electrical Systems 1		2	N. Hozumi H. Takikawa	1				
	Advanced Electrical Systems 2		2	R. Inada Y. Murakami		1			
	Advanced Microelectronics 1		2	K. Sawada Y. Ishikawa H. Sekiguchi T. Noda		1			
	Advanced Microelectronics 2		2	A. Wakahara H. Okada T. Kawano K. Takahashi	1				
	Advanced Information and Communication Systems 1		2	H. Uehara K. Takeuchi		1			
	Advanced Information and Communication Systems 2		2	S. Ichikawa M. Tamura	1				
	Methodology of R & D		2	Supervisor	1				

※1 Students who have obtained the credit of this subject during Master's program must take another subject among subject in the doctoral program

Computer Science and Engineering
(Doctoral Degree Program)

2021.10

Compulsory / Elective	Subject Name	Excluded from GPA	Credits	Instructor	1st grade				2nd grade	3rd grade	Note
					Fall 1	Fall 2	Spring1	Spring2			
					2021.10 - 2022.3	2022.4 - 2022.9	2022.10 - 2023.9	2023.10 - 2024.9			
Compulsory	Seminar on Computer Science and Engineering 1	○	4	Supervisor	4						
	Seminar on Computer Science and Engineering 2	○	1	Supervisor					1		
	Seminar on Interdisciplinary Research		1						1		
Elective Required	Ethics for Researchers		1		1						※1
Elective	Advanced Data Science and Analysis 1		1	T. Akiba	1				(0.5)		
	Advanced Data Science and Analysis 2		1	M. Aono S. Kuriyama		1			(0.5)		
	Computer Network Engineering 1		1	K. Umemura	1						
	Computer Network Engineering 2		1	R. Ohmura		1					
	Advanced Robotic Perception and Human-Robot Interaction 1		1	J. Miura	1				(0.5)		
	Advanced Robotic Perception and Human-Robot Interaction 2		1	N. Ohshima R. Ohmura		1			(0.5)		
	Advanced Information Visualization		1	S. Kuriyama					0.5		
	Computers and Education, Advanced		2	K. Kawai			1				
	Advanced 3D Vision Computation 1		1	Y. Kanazawa	1				(0.5)		
	Advanced 3D Vision Computation 2		1	Y. Sugaya		1			(0.5)		
	Theoretical Computer Science, Advanced		1	T. Fujito					0.5		
	Advanced Molecular Simulation 1		1	N. Kurita			1				
	Advanced Molecular Simulation 2		1	H. Goto				1			
	Advanced Computational Intelligence in Brain System		1	K. Murakoshi			1		(0.5)		
	Complex and Intelligent Systems		1	Y. Ishida	1				0.5		
	Advanced Human Sensation and Perception 1		1	S. Nakauchi	1				(0.5)		
	Advanced Human Sensation and Perception 2		1	K. Koida		1			(0.5)		
	Information Security, Advanced		1	K. Suzuki					0.5		
	Advanced Auditory System and Sound Perception		1	T. Matsui					0.5		
	Advanced Statistical Machine Learning Theory		1	K. Watanabe				1			
Advanced X Reality and Psychology 1		1	M. Kitazaki	1				(0.5)			
Advanced X Reality and Psychology 2		1	T. Matsui T. Minami		1			(0.5)			

◆ Those subjects whose numbers marked with "()" will be held every year.

◆ "0.5" signifies that this subject will be held in any one of a quarter term (Spring 1, Spring 2, Fall 1 or Fall 2).

※1 Students who have obtained the credit of this subject during Master's program must take another subject among subject in the doctoral program

Applied Chemistry and Life Science
(Doctoral Degree Program)

2021.10

Compulsory / Elective	Subject Name	Excluded from GPA	Credits	Instructor	1st grade		2nd grade	3rd grade	Note
					Fall	Spring			
					2021.10 - 2022.3	2022.4 - 2022.9	2022.10 - 2023.9	2023.10 - 2024.9	
Compulsory	Seminar on Applied Chemistry and Life Science 1	○	4	Supervisor	4				
	Seminar on Applied Chemistry and Life Science 2	○	1	Supervisor			1		
	Seminar on Interdisciplinary Research		1				1		
Elective Required	Ethics for Researchers		1		1				※1
Elective	Advanced Chemical Technology		2	A. Matsumoto T. Mizushima T. Oguchi K. Takashima	1				
	Advanced Ecological Engineering		2	H. Nakano H. Daimon		1			
	Advanced Biotechnology 1		2	T. Eki T. Tanaka A. Nakabachi		1			
	Advanced Biotechnology 2		2	E. Yoshida R. Numano S. Yoshida	1				
	Advanced Molecular Function Chemistry 1		2	K. Shibatomi N. Haraguchi		1			
	Advanced Molecular Function Chemistry 2		2	H. Tsuji Y. Saito R. Tero	1				

※1 Students who have obtained the credit of this subject during Master's program must take another subject among subject in the doctoral program

Architecture and Civil Engineering
(Doctoral Degree Program)

2021.10

Compulsory / Elective	Subject Name	Excluded from GPA	Credits	Instructor	1st grade		2nd grade	3rd grade	Note
					Fall	Spring			
					2021.10 - 2022.3	2022.4 - 2022.9	2022.10 - 2023.9	2023.10 - 2024.9	
Compulsory	Seminar on Architecture and Civil Engineering 1	○	4	Supervisor	4				
	Seminar on Architecture and Civil Engineering 2	○	1	Supervisor			1		
	Seminar on Interdisciplinary Research		1				1		
Elective Required	Ethics for Researchers		1		1				※1
Elective	Advanced Mechanics and Design of Spatial Structure Systems		2	S. Nakazawa Y. Matsumoto	1				
	Advanced Structural Design		2	T. Saito T. Matsui	1				
	Advanced Building Environmental Engineering and Building Services		2	Y. Shimazaki		1			
	Advanced Theory in Architectural Design		2	S. Matsushima A. Mizutani	1				
	Sustainable Urban Planning		2	J. Asano H. Ono	1				
	Advanced Geologic Hazard Mitigation Planning		2	K. Miura T. Matsuda	1				
	Advanced Water Environmental Engineering		2	T. Inoue S. Kato K. Yokota	1				
	Advanced Environmental Control in Biology		2	K. Takayama T. Tokairin		1			
	Advanced Transportation Systems and Economics		2	H. Shibusawa N. Sugiki K. Matsuo		1			
	Advanced Western Culture		2	K. Aikyo		1			

※1 Students who have obtained the credit of this subject during Master's program must take another subject among subject in the doctoral program