# Syllabus

# International Master's Degree Program (2022-Spring Term)

#### (M40030050)Japanese Life Today[Japanese Life Today]

Subject name[English]	Japanese Life Too	day[Japanese Life T	oday]		
Schedule number	M40030050	Subject area	General	Required or	Elective
			courses	elective	
Time of starting a course	Spring term	Day of the	Thu.5~5	Credit(s)	2
		week,period			
Faculty	Graduate Program	n for Master's Degre	e	Subject grade	1~
Department Offered	Mechanical Engi	neering, Architect	ture and Civil	Beggining grade	M1
	Engineering, Elec	trical and Electro	onic Information		
	Engineering, Con	nputer Science a	and Engineering,		
	Applied Chemistry	and Life Science			
Charge teacher name[Roman	S総合-教務委員	,穗積 直裕,大門	裕之, Lim Pang I	Boey,岡田浩,岩	内 章太郎,畑山
alphabet mark]	要介,稗田 睦子,	蔡 万里,中村 大	、介, 武藤 浩行, 利	印泉 司, 社河内 2	攴里,齊藤 大樹,
	浅井 良策, TAN WAI KIANSougou kyoiku kyomu Iin, HOZUMI Naohiro, DAIMON Hiroyuki,				
	Lim Pang Boey, OKADA Hiroshi, IWAUCHI Shotaro, HATAYAMA Yosuke, HIEDA Mutsuko,				
	SAI Banri, NAKA	MURA Daisuke, M	/IUTO Hiroyuki, I	ZUMI Tsukasa, SI	HAKOUCHI Yuri,
	SAITOH Taiki, AS	AI Ryosaku, TAN W	AI KIAN		
Numbering	GEN_LIB51325				

#### **Objectives of class**

In this series of lectures, the excellent experts of our university from different areas will impart to the engineering students highly interesting insider knowledge. The participants will get to know Japan of today from technical, economic and social viewpoints.

#### **Contents of class**

1. on-demand Hozumi "Japan's Modernization Suppoted by Electric Power"

Japan's modernization started in the middle of 19 th centry when a long period of isolation policy has been terminated. Her repid growth until now has been strongly supported by electric power. Now Japan's power supply is recognized as the best quality in the world. In the lecture, history and state of the art of Japan's electric power will be presented.

2. on-demand Daimon "Working in Japanese Company"

Learn and discuss about working in Japanese company and what you should do for it.

3. on-demand Lim Pang Boey "Japanese Education System"

Learn about the Japanese education system and what the life of a student is like in Japan?

#### 4. on-demand Okada "History and Today of Measurement"

Measurement is a fundamental part not only in science and engineering but also in our daily life. Now, most of the measurement units are standardized in the world, however, we can find out unique aspects of the country from their measurement system. This class introduces history and today of measurement in Japan.

5.on-demand Iwauchi "Nihilism in Japan"

In this lecture, we will examine the existential consciousness of contemporary Japan. In particular, we analyze the essence of nihilism and melancholy, the belief or insight that everything is useless and nothing has any values, from a philosophical perspective.

6. on-demand Hatayama "Social problems in Japan"

Modern Japanese society faces many social problems derived from conflict between conventional institutions and social changes. This lecture especially focuses on problems related with isolation including "Hikikomori" which have broadly known as inherent problems in Japan.

7. on-demand Hieda "Sports Science in Japan"

There is a major development of knowledge in Sports Science in recent years in the world, and Japan is no exception. In this lecture, students learn trends in Sports Science in Japan.

8. on-demand Sai "The legal system of Intellectual Property in Japan"

In modern information society, technological and cultural reforms progress very quickly. And this progress has been based on what is known as intellectual rights such as patent right, trademark right, copyright, and other rights related to intellectual property.

Intellectual property issues cause a number of problems which have attracted much interest in the present society. This class explains the Japanese legal system of Intellectual property, in particular focusing on the legal protection of patent right and copyright in Japan.

9. on-demand Nakamura "Cinema of Japan"

Japan is recognized as one of the most creative countries in the movie culture. This class presents the method of "shot analysis", referring to some Japanese classical films.

10. on-demand Muto "Fine Ceramics"

Fine Ceramics (also known as "advanced ceramics") are used to make components that require high levels of performance and reliability, such as advanced electronic devices and so on. In fact, Fine Ceramics support the latest technologies in diverse applications throughout modern society.

In this class, students will learn about "manufacture (Mono-zukuri)" in Japan.

11. on-demand Izumi "Modern literature in Japanese society"

Although book sales is decreasing in Japan recently, there are a lot of people who want to become a novelist. Why don't Japanese people buy books? Nevertheless, why do some people want to become a Novelist?

Let's think about book market in Japan together and learn about Japanese modern literature.

12. on-demand Shakouchi "Cultural Differences in Animation Movies"

When some Japanese animation movies are translated into foreign languages, not only words but also other elements of the movies are changed. Why? What do all these changes mean? We would like to discuss the meaning of these changes in terms of the contextual differences in different cultures.

13. on-demand Saito "Earthquake safety of buildings in Japan" The purpose of this lecture is to understand the history of earthquake disasters in Japan and lessons learned from those disasters for the safety of buildings.

14. on-demand Asai "Subjective Construal reflected in the Japanese language"

Sentences like "The mountain range runs from north to south" and "The students get younger every year." suggest that a linguistic expression does not depict the real world as it is, but involves the language users' subjective construal of it. In the literal sense of the word, the mountain does not run, and the students do not get younger (but older), either.

More interestingly, the Japanese language is abundant in this kind of "subjective" expressions and are more likely to adopt "subjective" construal in encoding the situation than English and other languages. We will learn about what it is really meant by the notion of Subjective Construal through looking at a large number of Japanese linguistic data, and contrasting them with their less subjectively construed English translations.

15. On demand Tan "Transition towards sustainability and globalization: From Japan perspective"

Japan is known to be one of the world leaders in sustainability-focused reformation leading to new concepts and breakthrough technologies. In this lecture, an overview of the transition from the perspective of culture and technology toward modern sustainability will be given, and most importantly, what can we learn from these to achieve sustainable development goals.

#### Self Preparation and Review

Review each lecture and prepare for the next class with reference to the textbook. **Related subjects** 

#### N/A

Notes for textbook

Papers(resume) will be distributed.

Notes for reference N/A

Goals to be achieved

1) To understand a variety of Japanese cultural, social, and engineering perspectives.

2) To evaluate and criticize Japanese characteristics from interdisciplinary viewpoints.

3) To discuss and write global understanding.

Evaluation of achievement

Evaluation method: scoring will be proceeded by sum of each report evaluation

Evaluation criteria: Students who attend all classes will be evaluated as follows: S: Achieved all goals and obtained total points of exam and reports, 90 or higher (out of 100 points).

A: Achieved all goals and obtained total points of exam and reports, 80 or higher (out of 100 points).

B: Achieved at least 65 % of goals and obtained total points of exam and reports, 70 or higher (out of 100 points).

C: Achieved at least 55 % of goals and obtained total points of exam and reports, 60 or higher (out of 100 points).

Examination

試験期間中には何も行わない

None during exam period **Details of examination** 

N/A

Other information

N/A Reference URL

N/A

**Office hours** After each class.

Relations to attainment objectives of learning and education

Key words

Japan, Japanese, Culture, Religion, Politics & Economy, Technology

Subject name[English]	Principles of Japanese C	Conversation[Principles o	of Japanese Conver	sation]	
Schedule number	M40030080	Subject area	General courses	Required or elective	Electiv
Time of starting a course	Spring term	Day of the week,period	Wed.1~1	Credit(s)	2
Faculty	Graduate Program for Ma	aster's Degree		Subject grade	1~
Department Offered	Mechanical Engineering Electrical and Electro Science and Engineering	g, Architecture and g onic Information Engine g, Applied Ch <u>emistry and</u>	Civil Engineering, eering, Computer Life Scie <u>nce</u>	Beggining grade	M1
Charge teacher name[Roman	村松 由起子 MURAMAT	TSU Yukiko			
Alphabet marks Numbering	GEN LIB51425				
(対面/同時双方向)1. (対面/同時双方向)2. (対面/同時双方向)3. (対面/同時時双方向)5. (対面/同時時双方向)5. (対面/同時時双方向)6. (対面/同時時双方向)7. (対面/同同時双方向)8. (対面/同同時双方向)10 (対面/同時時双方向)11 (対面/同時時双方向)11 (対面/同時形双方向)12 (対面/同時形双方向)15 (対面/同時取方向)15 (対面/同時取方向)15	発音 L.1 L.2 L.3 L.4 L.5 L.6 L.7 L.8 L.9 L.10 L.10 L.11 L.12 L.11 L.12 L.13 5. 復習 S. 期支試驗				
「本学の新型コロナウ・ 合があります。」 授業実施形態が変更(	ィルス感染拡大防止のため こなる場合は, GoogleClass	うの活動基準の変更に件 sroom または教務情報シ	ドい、授業内容およて <sup>,</sup> ステムより通知しま	び成績の評価注 す。	い変更け
Students will learn the	following lessons in Japan	ese textbook " Basic Ja	panese for Student	s Hakase1".	
It will be informed via (	Google Classroom or KYON	AU JOHO SYSTEM.	nteractive.		
(face to face /remote	simultaneous interactive)	1. Pronunciation of Japa	anese		
trace to tace / remote	cimultaneous interactive)	2 Lesson 1 Haiimemash	vite Watashi wa Her	on decu	
(face to face / remote (face to face / remote	simultaneous interactive) simultaneous interactive)	<ol> <li>Lesson 1 Hajimemash</li> <li>Lesson 2 O-kuni wa companya kuni kuni wa companya kuni kuni kuni kuni kuni kuni kuni kuni</li></ol>	nite. Watashi wa Her dochira desuka.	ren desu.	

(face to face /remote (face to face /remote	simultaneous i simultaneous i simultaneous i simultaneous i simultaneous i simultaneous i simultaneous i simultaneous i simultaneous i	nteractive) 5. Lesso nteractive) 6. Lesso nteractive) 7. Lesso nteractive) 8. Lesso nteractive) 9. Lesso nteractive) 10.Lesso nteractive) 11.Lesso nteractive) 12.Lesso nteractive) 13.Lesso nteractive) 14.Lesso nteractive) 15.Revie nteractive) 16.Term	on 4 Watashi wa a on 5 Ima nan-ji do on 6 Ashita doko on 7 Juu-gatsu ju on 8 Kyooshitsu n on 9 Yuubinkyoku on 10 Nihon e rob on 11 Fuji-san wa on 12 Ryokoo wa on 13 Shuumatsu w exam.	asa koohii o nomima esuka. e ikimasu ka. uu-go-nichi ni Nihor ni dare ga imasu ka. wa doko ni arimasu totto no kenkyuu ni u kireina yama desu. doo deshita ka. & ni nani oshitai desu	isu. & Active lear ka. & Active kimashita. & & Active lea Active learning ka. & Active	& Active learning rning learning Active learning rning g learning
If there will be any cha	nges regarding	Toyohashi Universi	ty of Technology	Activity Restriction	ns Level for	
Preventing the Spread	of Corona viru	is, the course conte	nt and evaluation	of achievement are	e subject to cha	ange. VSTEM
If there is any changes	about a class	schedule, it will be i			000000100	
Self Preparation and F 語彙, Notes を予習して 毎回復習として「Struct Preparation: Please re: Beview:Please memori	<b>leview</b> こおいてくださし tures」を覚えて ad Vocabulary ze <sup>~</sup> Structures	ヽ。(90 分) ください。(90 分) and Notes in each le ″after each lesson	esson. (90 min.) (90 min.)			
Related subjects		arter each lesson.	(30 mm.)			
特になし						
N/A Textbook1	Book title	Basic Japanese fo	or Students Hakas	se 1 (はかせ1)	ISBN	9784883194056
	Author	Yamazaki	Publisher	3A Corporation	Publish	
		yoshiko, Doi mitsuru		(スリーエーネッ トワーク)	year	
¥2,000(税抜き) https://www.3anet.coj ¥2,000(+tax) https://www.3anet.coj Notes for reference 特になし N/A Goals to be achieved	p/np/en/book	s/4062/ s/4062/				
1)日本語初級の文型 2) わさしい日本語を使	を理解すること	ができる。	でキス			
2) Webly 日本語を使 1)You will be able to u	nderstand basi	c Japanese structur	ce තං es and grammatio	cal items.		
2)You will be able to co	ommunicate wi	th Japanese people	in easy Japanese	ð.		
Evaluation of achieven 宿題と練習40%,期末 S:達成目標をすべて A:達成目標を80%通 B:達成目標を70%通 C:達成目標を60%通 Homework&Active lea Evaluation criteria: Students who attend a	nemt 気試験60%の 達成しており、 達成しており、カ 達成しており、カ 達成しており、カ irning 40%, Exau	割合で評価する。 かつテスト・レポート <sup>か</sup> つテスト・レポート <i>0</i> <sup>か</sup> つテスト・レポート <i>0</i> mination 60% pe evaluated as follo	の合計点(100 点 )合計点(100 点 )合計点(100 点 )合計点(100 点 ) の合計点(100 点) ws:	i満点)が 90 点以上 満点)が 80 点以上 満点)が 70 点以上 満点)が 60 点以上		
S: Total points obtaine A: Total points obtaine B: Total points obtaine C: Total points obtaine <b>Examination</b> 定期試験を実施(対面 Examination(Face to F	d from exams a d from exams d from exams d from exams ) ace)	and homework, 90 o and homework, 80 o and homework, 70 o and homework, 60 o	r higher (out of 1 r higher (out of 1 r higher (out of 1 r higher (out of 1	00 points). 00 points). 00 points). 00 points).		

Details of examination
特になし
N/A
Other information
特になし
N/A
Reference URL
特になし
N/A
Office hours
火曜日 13:00-13:30
Tuesday 13:00-13:30
Relations to attainment objectives of learning and education
Key words
Basic Japanese

# (M41630220)Advanced Mechanical Systems Design II[Advanced Mechanical Systems Design II]

Subject name[English]	Advanced Mecha	nical Svstems Desig	n II[Advanced Mech	anical Systems De	sign II]	
Schedule number	M41630220	Subject area	Advanced	Required or	Elective	
			Mechanical	elective		
			Engineering			
Time of starting a course	Spring term	Dav of the	Mon.4~4	Credit(s)	2	
<b>C</b>		week,period				
Faculty	Graduate Program	n for Master's Degre	e	Subject grade	1~	
Department Offered	Mechanical Engin	eering		Beggining	M1	
				grade		
Charge teacher name[Roman	S1系教務委員,	柴田 隆行,永井 首	萌土,河村 庄造,枚	公原 真己,足立 \$	忠晴,竹市 嘉紀,	
alphabet mark]	安部 洋平 1kei	i kyomu Iin-S, SHi	IBATA Takayuki, N	AGAI Moeto, KA	WAMURA Shozo,	
	MATSUBARA Ma	sami, ADACHI Tada	haru, TAKEICHI Yos	shinori, ABE Yohei		
Numbering	MEC_MAS53025					
Objectives of class						
This lecture aims to provide a br	oad understanding	of the mechanical s	ystems design avail	able for the maste	r thesis research	
work of a student.						
This lecture aims to provide a br	oad understanding	of the mechanical s	ystems design avail	able for the maste	r thesis research	
work of a student.						
		<b>C</b>   1 / 1 · · · ·				
The class provides both of fundation	amental knowledge	or his/her master t	nesis research wor	k and the most ad	vanced results in	
the related field by reading rese	earch papers and n	nonographs. The co	muents of the class	s uepena on the s	supervisor. To be	
The close provides both of final	urs.	of his /hor meeters t	hooin roocarah ward	and the meant	upped results in	
the class provides both of fundation the related field by reading read	americal knowledge	of his/her master t	nesis research wor	k and the most ad	upervisor. To be	
appounced by individual supervise	arch papers and n	nonographs. The co	intents of the class	s depend on the s	supervisor. To be	
Self Preparation and Review	J13.					
Follow instruction of supervisors						
Follow instruction of supervisors.						
Related subjects						
Follow instruction of supervisors						
Follow instruction of supervisors.						
Notes for textbook						
Textbook or material will be made	e available from the	supervisors.				
Textbook or material will be made	e available from the	supervisors.				
Notes for reference						
N/A						
N/A						
Goals to be achieved						
To acquire fundamental knowledg	e of individual rese	arch fields.				
To acquire the ability to find prob	lems, the ability to	solve the problems	and the presentatio	n skill.		
To acquire fundamental knowledg	e of individual rese	arch fields.				
To acquire the ability to find prob	lems, the ability to	solve the problems	and the presentatio	n skill.		
Evaluation of achievement						
Coursework, presentation and/or	report.					
Grade levels are C(60% - less tha	n 70%), B(70-less	than 80%), A(80% – I	ess than 90 %) and \$	S(90% or over).		
Coursework, presentation and/or	report.					
Grade levels are C(60% - less than 70%), B(70- less than 80%), A(80% - less than 90 %) and S(90% or over).						
Examination 計除期間内にはすもになない。						
武 駅 労 川 印 中 「 に は 1 円 も 1 丁 わ な し い	試験 期間 Hund					
N/A						
N/A						
Other information						
For any questions contact yours	supervisor					
For any questions, contact your s	supervisor.					
Reference URL	• •					

Ν	/Α
Ν	/A

# Office hours

Contact your supervisor.

Contact your supervisor.

# Relations to attainment objectives of learning and education

(C) Practical and creative skills to utilize advanced knowledge in an integrated manner

Have advanced knowledge about mechanical engineering and related fields and have the practical and creative skills to utilize such knowledge forproblem solving in an integrated manner

(C1) Have the skills to voluntarily acquire theories and applied knowledge about mechanical engineering and related fields; and to utilize such knowledge in an integrated manner

(C2) Have the skills to learn, by experience, methodologies for research and development through integrating extensive knowledge about mechanical engineering and related fields; to make plans for research and development and put them intopractice; and to create new technologies to solve problems

# Key words

mechanical system design mechanical system design

# (M41630240)Advanced Materials and Manufacturing Process II[Advanced Materials and Manufacturing Process II]

		1.00000 ML/10440100			
Subject name[English]	Advanced Materi Process II	als and Manufactu	ring Process II[Adv	vanced Materials a	nd Manufacturing
Schedule number	M41630240	Subject area	Advanced	Required or	Elective
	MITTOODE TO	Cubject a cu	Mechanical	elective	LIGGUIVO
			Engine ering	01000140	
Time of starting	Caralia a t	Dava of st		0	0
Time of starting a course	Spring term	Day of the week,period	Tue.4~4	Credit(s)	2
Faculty	Graduate Program	n for Master's Degr	ee	Subject grade	1~
Department Offered	Mechanical Engin	eering		Beggining	M1
				grade	
Charge teacher name[Roman	S1系教務委員,	戸高 義一, 三浦 1	<b>尊己,小林 正和,</b>	伊﨑 昌伸,横山	誠二,安井 利明
alphabet mark]	1kei kvomu Iin-	S. TODAKA Yoshi	kazu. MIURA Hiro	omi. KOBAYASHI	Masakazu, IZAKI
• -	Masanobu, YOKO	YAMA Seiii. YASUI	Toshiaki		
Numbering	MEC MAS54025	<b>3</b> ,			
		C 11			
This lecture aims to provide a br	oad understanding	of the materials and	a manufacturing pro	cess available for t	the master thesis
research work of a student.					
This lecture aims to provide a br	oad understanding	ot the materials and	d manufacturing pro	ocess available for t	the master thesis
research work of a student.					
Contents of class					
The class provides both of funda	amental knowledge	of his/her master t	hesis research wor	rk and the most ad	vanced results in
the related field by reading rese	earch papers and r	nonographs. The co	ontents of the clas	s depend on the s	supervisor. To be
announced by individual supervise	ors.				
The class provides both of funda	amental knowledge	of his/her master t	hesis research wor	rk and the most ad	vanced results in
the related field by reading rese	earch papers and r	nonographs. The co	ontents of the clas	s depend on the s	supervisor. To be
announced by individual supervise	ors.				
Self Preparation and Review					
Follow instruction of supervisors.					
Follow instruction of supervisors.					
Related subjects					
Follow instruction of supervisors					
Follow instruction of supervisors					
Notes for textbook					
Textbook or material will be made	available from the	supervisors			
Textbook or material will be made	available from the	supervisors.			
Notes for reference		supervisors.			
N/A					
N/A					
Goals to be achieved	<u></u>				
To acquire fundamental knowledg	e of individual rese	arch fields.			
I o acquire the ability to find prob	lems, the ability to	solve the problems	and the presentation	on skill.	
To acquire fundamental knowledg	e of individual rese	arch fields.			
To acquire the ability to find prob	lems, the ability to	solve the problems	and the presentation	on skill.	
Evaluation of achievement					
Coursework, presentation and/or	report.				
Grade levels are C(60% - less that	n 70%) B(70-less	than 80%) A(80% – I	ess than 90 %) and	S(90% or over)	
Coursework presentation and/or	renort				
Grade levels are C(60% - less that	n 70%) R(70- less	than 80%) Δ(ՋՈ% – Ι	ess than 90 %) and	S(90% or over)	
Framination					
試験期間由にけ何も行わたい					
INAR STILL TILLA PUCT 11/365					
N/A					
N/A					
Other information					
For any questions, contact your s	supervisor.				
For any questions, contact your s	supervisor.				

#### **Reference URL**

N/A N/A

Office hours

Contact your supervisor.

Contact your supervisor.

#### Relations to attainment objectives of learning and education

(C) Practical and creative skills to utilize advanced knowledge in an integrated manner

Have advanced knowledge about mechanical engineering and related fields and have the practical and creative skills to utilize such knowledge forproblem solving in an integrated manner

(C1) Have the skills to voluntarily acquire theories and applied knowledge about mechanical engineering and related fields; and to utilize such knowledge in an integrated manner

(C2) Have the skills to learn, by experience, methodologies for research and development through integrating extensive knowledge about mechanical engineering and related fields; to make plans for research and development and put them intopractice; and to create new technologies to solve problems

Key words

Materials, Manufacturing Process Materials, Manufacturing Process

# (M41630260)Advanced System, Control and Robotics II[Advanced System, Control and Robotics II]

Subject name[English]	Advanced System	m Control and Robo	tics II[Advanced Sv	stem Control and I	Robotics II]		
Schedule number	M41630260	Subject area	Advanced	Required or	Flective		
		Jusjoot al ba	Mechanical	elective	_1000110		
			Engineering	000040			
Time of starting a course	Spring term	Day of the	Thu 4~4	Credit(s)	2		
		week period	ind.i i		-		
Faculty	Graduate Progra	m for Master's Degr	ee	Subject grade	1~		
Department Offered	Mechanical Engir	neering		Beggining	M1		
	0	0		grade			
Charge teacher name[Roman	S1系教務委員,	佐藤 海二,佐野	滋則 高山 弘太郎	郎,内山 直樹,高	木 賢太郎 1kei		
alphabet mark]	kyomu Iin-S, SA	TO Kaiji, SANO Shi	genori, TAKAYAMA	Kotaro, UCHIYAM	A Naoki, TAKAGI		
	Kentaro	•					
Numbering	MEC_MAS55025						
Objectives of class							
This lecture aims to provide a bro	oad understanding	of the control and r	obotics available for	the master thesis	research work of		
a student.							
This lecture aims to provide a bro	oad understanding	of the control and r	obotics available for	the master thesis	research work of		
a student							
Contents of class							
The class provides both of funda	amental knowledge	of his/her master	hesis research wor	k and the most ad	vanced results in		
the related field by reading rese	earch papers and	monographs. The c	ontents of the class	s depend on the s	supervisor. To be		
announced by individual superviso	ors.	<b>U</b> .					
The class provides both of funda	amental knowledge	of his/her master	hesis research wor	k and the most ad	vanced results in		
the related field by reading rese	arch papers and i	monographs. The c	ontents of the class	s depend on the s	supervisor. To be		
announced by individual supervise	ors.			-			
Self Preparation and Review							
Follow instruction of supervisors.							
Follow instruction of supervisors.							
Related subjects							
Follow instruction of supervisors.							
Follow instruction of supervisors.							
Notes for textbook							
Textbook or material will be made	e available from the	e supervisors.					
Textbook or material will be made	e available from the	e supervisors.					
Notes for reference							
N/A							
N/A							
Goals to be achieved							
To acquire fundamental knowledg	e of individual rese	earch fields.					
To acquire the ability to find prob	lems, the ability to	solve the problems	and the presentatio	n skill.			
To acquire fundamental knowledg	e of individual rese	earch fields.					
To acquire the ability to find prob	lems, the ability to	solve the problems	and the presentatio	n skill.			
Evaluation of achievement							
Coursework, presentation and/or	report.						
Grade levels are C(60% - less tha	in 70%), B(70- less	than 80%), A(80% -	ess than 90 %) and \$	S(90% or over).			
Coursework, presentation and/or	report.						
Grade levels are C(60% - less tha	in 70%), B(70- less	than 80%), A(80% -	ess than 90 %) and \$	S(90% or over).			
Examination							
試験期間中には何も行わない							
None during exam period	None during exam period						
Details of examination							
N/A							
N/A							
Other information							
For any questions, contact your s	supervisor.						
For any questions, contact your s	supervisor.						
N/A							

N/A

Office hours

Contact your supervisor. Contact your supervisor.

#### Relations to attainment objectives of learning and education

(C) Practical and creative skills to utilize advanced knowledge in an integrated manner

Have advanced knowledge about mechanical engineering and related fields and have the practical and creative skills to utilize such knowledge forproblem solving in an integrated manner

(C1) Have the skills to voluntarily acquire theories and applied knowledge about mechanical engineering and related fields; and to utilize such knowledge in an integrated manner

(C2) Have the skills to learn, by experience, methodologies for research and development through integrating extensive knowledge about mechanical engineering and related fields; to make plans for research and development and put them intopractice; and to create new technologies to solve problems

#### Key words

System, Control, Robotics System, Control, Robotics

# (M41630280)Advanced Energy and Environmental Engineering II[Advanced Energy and Environmental Engineering II]

Subject name[English]	Advanced Energy	and Environment	al Engineering II[A	dvanced Energy ar	nd Environmental	
	Engineering II]	1	I	I		
Schedule number	M41630280	Subject area	Advanced	Required or	Elective	
			Mechanical Engine agring	elective		
Time of starting a course	Spring term	Day of the	Erigineering	Credit(s)	2	
	oping torm	week,period			2	
Faculty	Graduate Program	n for Master's Degre	e	Subject grade	1~	
Department Offered	Mechanical Engin	eering		Beggining	M1	
	01 五批改手号		쓰Ⴕ ㅗㅛ ᆂᆂᅭᅒ	grade	四十四十一	
Charge teacher name[Roman	SI 杀教務安員, 正 圳田 禾記 :	甲杓 柏二, 松岡 3 株山 埔中 1kg kg	彩古, 工开 課太郎	3, 鈰木 李可, 取田	明田, 関ト 信 OKA Tounovoohi	
	DOI Kentaro SI	演山 诗文 ikei kyd I7IIKI Takashi IID	A Akivoshi SEKIS	SHITA Nobumasa	YANADA Hideki	
	YOKOYAMA Hiro	shi				
Numbering	MEC_MAS56025					
Objectives of class						
This lecture aims to provide a bro	oad understanding o	of the energy and e	nvironmental engine	eering available for t	the master thesis	
research work of a student.						
This lecture aims to provide a bro	oad understanding o	of the energy and e	nvironmental engine	eering available for t	the master thesis	
research work of a student.						
		<b>C L</b> <sup>1</sup> <b>L L L</b>				
The class provides both of fundation the related field by reading read	amental knowledge	of his/her master t	nesis research wo	rk and the most ad	vanced results in	
announced by individual superviso	ors	nonographs. The co	intents of the clas	s depend on the s	supervisor. To be	
The class provides both of funda	amental knowledge	of his/her master t	hesis research wo	rk and the most ad	vanced results in	
the related field by reading rese	earch papers and n	nonographs. The co	ontents of the clas	s depend on the s	supervisor. To be	
announced by individual supervise	ors.					
Self Preparation and Review						
Follow instruction of supervisors.						
Follow instruction of supervisors.						
Follow instruction of supervisors.						
Notes for textbook						
Textbook or material will be made	e available from the	supervisors.				
Textbook or material will be made	e available from the	supervisors.				
Notes for reference						
N/A						
N/A						
Goals to be achieved	<b>C</b> · · · · · ·					
To acquire the ability to find prob	e of individual researchers the ability to	arch fields.	and the presentation	on skill		
To acquire fundamental knowledg	e of individual rese	arch fields		on skii.		
To acquire the ability to find prob	lems, the ability to	solve the problems	and the presentation	on skill.		
Evaluation of achievement						
Coursework, presentation and/or	report.					
Grade levels are C(60% – less than 70%), B(70– less than 80%), A(80% – less than 90 %) and S(90% or over).						
Coursework, presentation and/or report.						
Grade levels are G(00% - less than 70%), B(70- less than 80%), A(80% - less than 90%) and S(90% or over).						
試験期間中には何も行わない						
None during exam period						
Details of examination						
N/A						
N/A						
Other information						
For any questions, contact your s	supervisor.					
i or any questions, contact your s						

Reference URL
N/A
N/A
Office hours
Contact your supervisor.
Contact your supervisor.
Relations to attainment objectives of learning and education
(C)高度な知識を統合的に活用できる実践力・創造力
機械工学およびその関連分野に関する高度な知識を修得し、それらを課題解決のために統合的に活用できる実践的・創造的能
カを身につけている。
(C1)機械工学およびその関連分野の理論・応用知識を自発的に獲得し、それらを統合的に活用できる能力を身につけている。
(C2)機械工学およびその関連分野の広範囲の知識の連携により,研究開発に対する方法論を体得して,研究開発の計画を立
案および実践し,課題解決のための新たな技術を創造できる能力を身につけている。
(C) Practical and creative skills to utilize advanced knowledge in an integrated manner
Have advanced knowledge about mechanical engineering and related fields and have the practical and creative skills to utilize
such knowledge forproblem solving in an integrated manner
(C1) Have the skills to voluntarily acquire theories and applied knowledge about mechanical engineering and related fields; and
to utilize such knowledge in an integrated manner
(C2) Have the skills to learn, by experience, methodologies for research and development through integrating extensive
knowledge about mechanical engineering and related fields; to make plans for research and development and put them
intopractice; and to create new technologies to solve problems
Kasi wanda

#### Key words

Energy, Environment Energy, Environment

# (M41630310)Vibration Engineering[Vibration Engineering]

Subject name[English]	Vibration Engineering[Vibration E	Engineering]			
Schedule number	M41630310	Subject area	Advanced	Required or	Elective
			Mechanical	elective	
			Engineering		
Time of starting a	Spring1 term	Day of the	Tue.2~2	Credit(s)	1
course		week,period			
Faculty	Graduate Program for Master's [	Degree		Subject	1~
				grade	
Department Offered	Mechanical Engineering			Beggining	M1
				grade	
Charge teacher	河村 庄造 KAWAMURA Shozo				
name[Roman alphabet					
mark]					
Numbering	MEC_MAS53025				
Objectives of class					
学部の振動工学・応用振	動工学で 1 自由度系, 2 自由度	系の振動解析に	こついて学んでいるが,	実際の機械・構	遺物は非常に
大規模自由度を有してい	る. そのため, はじめに一般的な参	多自由度系を扱	うモード解析について	講義を行う 次に	こ,大規模自由
度の振動解析を簡便に行	うことのできる部分構造合成法に	ついて講義し,	それらの基本的な考え	方を理解する.	
This lecture will provide	the knowledge of modal analysis	s method and c	omponent mode synt	hesis method to	o treat a huge
degree of freedom system	n.				
Contents of class					
多自由度系のモード解析					
(対面)1:モード解析の導	入, 不減衰系				
(対面)2:比例粘性減衰系	k(1)				
(対面)3:比例粘性減衰系	κ(2) ∗≡π				
(对面)4:高次モードの影	響				
部分構造合成法					
(対面)5:分系の定式化					
(対面)6:拘束モード型モ	ード合成法(1)				
(対面)7:拘束モード型モ	ード合成法(2)				
(対面)8:不拘束モード型	モード合成法				
本学の新型コロナウィルス	ス感染拡大防止のための活動基準	隼の変更に伴い	、授業内容および成績	<b>しの評価法に変</b> す	更が生じる場合
があります。					
授業実施形態が変更にな	る場合は、GoogleClassroom や教	<b>෭務情報システ</b> ム	より通知します。		
Modal analysis for multi d	legree of freedom system				
(In-person) 1: Introductio	n of modal analysis, undamped sys	stem			
(In-person) 2: A system v	with proportional viscous damping	(1)			
(In-person) 3: A system v	with proportional viscous damping	(2)			
(In-person) 4: Compensate of higher vibration modes					
Component mode synthe	sis method				
(In-person) 5: Formulation	n of sub-systems				
(In-person) 6: Modal synt	hesis using constraint modes (1)				
(In-person) 7: Modal synt	hesis using constraint modes (2)				
(In-person) 8: Modal synt	hesis using non-constraint modes				
There may be changes t	o course content and academic a	assessment me	hods following chang	es to activities	to prevent the
spread of COVID-19.					
If there is any changes al	bout a class schedule, it will be inf	ormed via Goog	e Classroom or KYON	IU JOHO SYSTI	EM.
Self Preparation and Rev			セルス 羽レー / ファー		
毎回の講義内容を復省す	るとともに、次週の内容について	<b>奓</b> 考貸料等を参	考に予習してくること.		
Self-preparation and revi	ew are necessary.				
	光 中日市サイド				
致字,	字, 心用振動工字				
Dynamics, Vibration engin	neering, Mechanical vibration				
Notes for textbook					

Reference1	Randouts with be prepared. Reference1 Book title 王ード紹析 ISBN					
Reference i	Author	い の 単	Dublicher	位周舘	Dublich year	
D-f	Autrior Deak title	女仏叩力 如八世進合武法	Publisher	「」」」、「」」、「」」、「」」、「」」、「」」、「」」、「」」、「」」、「」		
Keterencez	BOOK UUB	● ⑦ ⑦ 悄 坦 □ № //	D. Llahau	位日始		
	Autnor	長 松 昭 男・八 熊 政明	Publisner	「「」」「」」「」」「」」「」」」「」」」」」」	Publish year	
Reference3	Book title	振動工学一応用	月編一	•	ISBN	
	Author	安田仁彦	Publisher	コロナ社	Publish year	
Notes for reference 特になし N/A	·					
Goals to be achieve (1)多自由度系のモ (2)部分構造合成法 (1) Understand the r	d ード解析について基 について基礎的なま modal analysis for n	磁的な理解を得る 里解を得ること nulti degree of free	っこと dom system			
(2) Understand the o	component mode sy	nthesis method				
Evaluation or acriev 評価法 :達成目標 評価基準:評価法に なお得点に。 上	<b>rement</b> の到達度を 2 回のL :よる得点が 60 点以 よって達成の程度を	→ポート(100 点満点 .上の場合を合格④ 明示する. 評価 S:	i)で評価する. 達成目標に到達 :90 点以上, 評f	した)とする. 西 A:80 点以上, 評	価 B:70 点以上, 評価	C:60 点以
Method: report (full	score 100).					
Level: achievement	in the case upper 6	0 points.				
Level S: upper 90 pc	oints, Level A: upper	· 80 points, Level E	3: upper 70 point	s, Level C: upper 6	i0 points	
Examination						
レホートで実施						
Details of examinati	ion					
特になし						
N/A						
Other information						
河村庄造:部屋番号	D-404, E-Mail:kav	vamura@me.tut.ac.j	ip > - tut an in			
Contact person: Pro	ot. Snozo Nawamura	E-Mail:Kawamurae	me.tut.ac.jp			
特になし						
N/A						
Office hours						
Eメール等で随時時	間を打ち合わせる					
Ask by E-mail.	ant chiectives of le	oming and educati	lan			
Relations to attaining 特になし	10ni objecuves vrik	arning and oddodd				
11 0						
機械工学専攻 (C)高度な知識を統 機械工学およびその 力を身につけている (C1)機械工学および N/A	記合的に活用できる3 2)関連分野に関する 3。 「その関連分野の理	≷践力・創造力 高度な知識を修得 論・応用知識を自∮	し, それらを課是 発的に獲得し, そ	看解決のために統合 からを統合的に活	ゝ的に活用できる実践的 用できる能力を身につい	・創造的能 けている。
Graduate Program o (C) Practical and cre Have advanced know such knowledge forp (C1) Have the skills to utilize such know	of Mechanical Engine eative skills to utiliz wledge about mech problem solving in ar to voluntarily acqu ledge in an integrat.	eering for Master's e advanced knowle anical engineering a n integrated manne ire theories and ap ed manner	Degree edge in an integr and related field r pplied knowledge	ated manner is and have the pra about mechanical	actical and creative skill engineering and related	ls to utilize   fields; and

**Key words** モード合成法, 部分構造合成法 Modal analysis, Component mode synthesis method

#### Subject name[English] Advanced Agricultural Engineering[Advanced Agricultural Engineering] Schedule number M41630510 Subject area Advanced Required or Elective Mechanical elective Engineering Credit(s) Time of starting a Spring2 term Day of the Thu.2~2 1 week.period course Faculty Graduate Program for Master's Degree Subject 1~ grade M1 Department Offered Mechanical Engineering Beggining grade 高山 弘太郎 TAKAYAMA Kotaro Charge teacher name[Roman alphabet mark] Numbering MEC\_MAS55025 **Objectives of class** (1)食料生産の基本となる植物を対象とした計測について概略と将来展望を理解する。 (2)植物を対象とした計測システムの設計・計測ができる知識と将来展望を身につける。 Learn fundamentals and future prospect of advanced agricultural engineering Contents of class (1) (On-demand) Advanced agricultural production in the world (2) Environmental control for agricultural production $\ I$ (3) (On-demand) Environmental control for agricultural production ${\rm I\!I}$ (4) Measurement system for photosynthesis and transpiration of crop $\,\, I$ (5) (On-demand) Measurement system for photosynthesis and transpiration of crop $\, { m I}$ (6) Plant growth monitoring with imaging robot $\,\, I$ (7) (On-demand) Plant growth monitoring with imaging robot $\, {\rm I\!I}$ (8) Review 45min, examination/reporting 45min If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Coronavirus, the course content and evaluation of achievement are subject to change. Self Preparation and Review •To enhance the learning effect, students are encouraged to precheck the lecture materials that will be distributed before the lecture. • Review the lecture materials after the lecture for around 90 minutes each. **Related** subjects N/A Textbook1 Book title N/A ISBN Author Publisher Publish year Notes for textbook Handouts will be prepared by the lecturer. ISBN Reference 1 Book title N/A Author Publisher Publish year Notes for reference N/A Goals to be achieved (1) Acquire basic knowledge of advanced agricultural engineering (2) Acquire adequate knowledge of environmental control and robotics in agriculture (3) Acquire adequate knowledge of image analysis for control in agriculture **Evaluation of achievement** 成績評価 Exam 10%, Report or Quiz 90% Students who attend all classes will be evaluated as follows: S:total score of examination and report is 90 points or higher. A:total score of examination and report is 80 points or higher. B:total score of examination and report is 70 pointrs or higher.

#### (M41630510)Advanced Agricultural Engineering[Advanced Agricultural Engineering]

C:total score of examination and report is 60 pointrs or higher.

Examination

レポートで実施 By Report

Details of examination

N/A

Other information

N/A

Reference URL N/A

# Office hours

Write a comment on Google Classroom if you have questions. The questions will be answered around the lecture time. In case you have personal or urgent questions, send an email directly to the lecturers.

12-13 on Mondy is mostly available.

Relations to attainment objectives of learning and education

(A)幅広い人間性と考え方
 人間社会を地球的な視点から多面的にとらえるグローバルな感性を持ち、人間と自然との共生、公共の福祉について考える能力を身につけている。
 (E)最新の技術や社会環境の変化に対する探究心と持続的学習力
 社会、環境、技術等の変化に対応して、生涯にわたって自発的に計画し学習する能力を身につけている。

(A) Personality and outlook with a broad perspective

Have an international mindset to see human society from various angles with a global perspective; and the ability to consider the symbiosis between humans and nature as well as publicwelfare

(E) Inquisitive outlook and skills for continuous learning in response to state-of-the-art technology and changes in the social environment

Have the skills to voluntarily make plans and learn throughout one's life in response to changesin society, environment and technology

# Key words

Environmental control, Plant diagnosis, Robotization, Automation

# (M42630110)Methodology of R & D 2[Methodology of R & D 2]

Subject name[English]	Methodology of R	& D 2[Metho	dologv	of R & D 2]			
Schedule number	M42630110	Subject are	a	Advanced	Required or	Elective	
				Electrical and	elective		
				Electronic			
				Information			
				Engineering			
Time of starting a course	Spring term	Day of	the	Tue.3~3	Credit(s)	2	
Faculty	Graduate Program	for Master's	Degra		Subject grade	1~	
Department Offered	Electrical and Ele	ctronic Inform	ation	Engineering	Beggining	M1	
Dopardnone offorda			lacion		grade		
Charge teacher name[Roman alphabet mark]	S2系教務委員 2	kei kyomu Iin-	S				
Numbering	ELC MAS58025						
Objectives of class							
The class aims to provide a ba	sic understanding (	of R&D meth	مطمامه	w related to the e	lectrical and electr	ronic information	
engineering for the research work	of his/her master	thesis	ouolog			onio information	
Contents of class		110313.					
The class provides some fundam	ental tips to condu	ict R&D work	effect	ively. Contents of t	the class depend o	n the supervisor.	
To be announced by individual su	pervisors.						
Self Preparation and Review							
Review each lecture and prepare	for the next class v	with reference	e to th	e textbook.			
Related subjects							
特になし							
N/A							
Notes for textbook							
To acquire the ability of identif	ying and formulatir	ng research p	robler	n, planning and imp	plementing specific	research tasks,	
troubleshooting and communicati	ng outcomes.						
Notes for reference							
N/A							
Goals to be achieved							
To acquire the ability of identif	ying and formulatir	ng research p	robler	n, planning and imp	plementing specific	research tasks,	
troubleshooting and communicati	ng outcomes.						
Evaluation of achievement							
Coursework and presentation are	evaluated generally	<b>y</b> .					
Grades: S: 90-100, A:80-89, B:70	-79, C:60-69.						
Examination							
試験期間中には何も行わない							
None during exam period							
Details of examination							
N/A							
N/A							
Reference URL							
N/A							
Office hours							
N/A							
Relations to attainment objectives of learning and education							
電気·電子情報工学専攻							
(C)高度な知識を統合的に活用できる実践力・創造力							
電気・電子情報工学およびその問	関連分野に関する語	高度な知識を	修得し	,それらを課題解決	そのために統合的に	活用できる実践	
的・創造的能力を身につけている		· · · · · · · · · · ·				- 7 //-   + +	
(C1)電気・電子情報工学および <sup>4</sup>	その関連分野の理語	篇・応用知識を	目発	的に獲得し、それら	を統合的に活用でき	ちん能力を身につ	
けしいる。   (00) 電気-電ス桂却て色かしざ	ᆂᇭᄪᇔᄭᄦᇵᆕ	毎日の空津の	() 古 +/# /	ᆕᅣᆝᅸᅖᅘᇥᇮᆠᆕ	;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;	目 イ 和売明み	
(し2) 電気・電士情報上子および・	ての関連分野の仏	軋囲の知識の か☆まま	·理勝	こより、研究開発に、	刈りる力法調を体作 ヽz	守し (,研究開発	
い計画を立余わよい夫成し、誅越	明形大の/このの新7こ	は仅他を剧垣	いさる	肥力を身につけし	, 'る <sup>。</sup>		

Graduate Program of Electrical and Electronic Information Engineering for Master's Degree

(C) Practical and creative skills to utilize advanced knowledge in an integrated manner

Have advanced knowledge about electrical and electronic information engineering as well as related fields; have the practical and creative skills toutilize such knowledge for problem solving in an integrated manner

(C1) Have the skills to voluntarily acquire theories and applied knowledge about electrical and electronic information engineering as well as related fields; to utilize such knowledge in an integrated manner

(C2) Have the skills to learn, by experience, methodologies for research and development through integrating extensive knowledge about electrical and electronic information engineering as well as related fields; to make plans for researchand development and put them into practice; and to create new technologies to solve problems

Key words

#### (M42630150)Physics for Electronics 2[Physics for Electronics 2]

Subject name[English]	Physics for Electronics 2[Physics for Electronics 2]						
Schedule number	M42630150	Subject area	Advanced	Required or	Elective		
			Electrical and	elective			
			Electronic				
			Information				
			Engineering				
Time of starting a course	Spring term	Day of the	Wed.3~3	Credit(s)	2		
		week,period					
Faculty	Graduate Program	n for Master's Degre	e	Subject grade	1~		
Department Offered	Electrical and Elec	ctronic Information I	Engineering	Beggining	M1		
			grade				
Charge teacher name[Roman	松田 厚範, 服部 敏明, 加藤 亮 MATSUDA Atsunori, HATTORI Toshiaki, KATOH Ryo						
alphabet mark]							
Numbering	ELC_MAS52025						

# Objectives of class

Objectives of this subject are to understand the fundamental aspects on functional materials, photonics, electrodics, ion recognition reagent, and also to have overall knowledge on the latest technologies on these physical phenomena.

#### Contents of class

"Physics for Electronics 2" is composed of 3 topics of functional materials, electrodics, and ion recognition reagents based on chemical analysis, which will be delivered for four times for each by three professors whose expertise lie on the individual categories.

The category of "functional materials" is made to learn preparation, characterization and applications of functional materials for electronics and ionics based on physics and chemistry. The contents are 1) Fundamentals of amorphous and crystal, 2) Structure and property of glasses, 3) New preparation techniques of advanced materials, 4) Functional materials for ionics including Li-ion battery and fuel cell, and 5) Functional materials for optics including coatings, micro-optical components, and photonic devices.

The category of "electrodics" is electrochemical reaction on electrode. The contents are 1) fundamentals of thermodynamics in aqueous solution, 2) fundamental of electrical double layer 3) fundamental of adsorption, 4) fundamentals of electrochemical reaction, and 5) applications of chemical sensor.

The category of "ion recognition reagents" is devoted to the understanding of (1) Fundamentals of chemical analyses, (2) Development of anion recognition reagent by using hydrogen bonding, and (3) Development of moisture sensing in oil with chemical sensor.

If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.

#### If there is any changes about a class schedule, it will be informed via Google Classroom or KYOMU JOHO SYSTEM. **Self Preparation and Review**

Students must perform their preparation and review of this subject based on the course materials with following the instruction of the teachers.

#### **Related subjects**

Physics for Electronics, Analysis of Inorganic Materials, Advanced Materials for Electronics, Functional Materials for Optical Applications, Analysis of Materials at Interface.

# Notes for textbook

(1) Atkins' Physical Chemistry,
by Peter Atkins (Author), Julio de Paula (Author)
(Oxford University Press) (2014)ISBN-10: 019969740X

(2) Inorganic Chemistry Paperback, by Duward Shriver (Author)

(W. H. Freeman)(2014) ISBN-10: 1429299061

# Notes for reference

#### Goals to be achieved

(1) To understand fundamental aspects on functional materials, photonics, electrodics and spin electronics.

(2) To get the knowledge on the latest technologies on these physical and chemical phenomena.

#### **Evaluation of achievement**

The final evaluation will be the sum of three categories (33.4%); functional materials, electrodics, and ion recognition reagents based on chemical analysis.

#### Examination

試験期間中には何も行わない

None during exam period

# **Details of examination**

Taking examination and submission of report will be explained and required by the teachers during their classes. Other information

 $\label{eq:Functional materials; Atsunori Matuda: matsuda@ee.tut.ac.jp$ 

Electrodics; Toshiaki Hattori : thattori@ee.tut.ac.jp

Ion recognition reagents based on chemical analysis: ryo\_kato@crfc.tut.ac.jp

# Reference URL

http://www.ee.tut.ac.jp/material

Office hours

one hour after every classes Relations to attainment objectives of learning and education

(C) The basic skills and applicability necessary to scientifically make technological advances Utilizing the ability realized from the acquisition of a basic knowledge in science and technology; the mastery of subjects in mathematics, natural science, information technology, MOT, global environmental technology, and intellectual property.

#### Key words

実務経験

functional materials, photonics, electrodisc, ion recognition reagent, chemical analysis

# (M42630190)Electrical Technology and Materials 2[Electrical Technology and Materials 2]

Subject name[English]	Electrical Technology and Materials 2[Electrical Technology and Materials 2]					
Schedule number	M42630190	Subject area	Advanced	Required or	Elective	
			Electrical and	elective		
			Electronic			
			Information			
			Engineering			
Time of starting a course	Spring term	Day of the	Tue.2~2	Credit(s)	2	
_		week,period				
Faculty	Graduate Program	n for Master's Degre	ee	Subject grade	1~	
Department Offered	Electrical and Ele	ctronic Information	Engineering	Beggining grade	MI	
Charge teacher name[Roman alphabet mark]	稲田 亮史,村上	義信, 針谷 達 INA	ADA Ryoji, MURAKA	MI Yoshinobu, HAF	RIGAI Toru	
Numbering	ELC MAS53025					
Objectives of class						
This leature is implemented as a	n introduction to c	lectrical energy cyr	tems and intended	for students and	other engineering	
dissiplines It is being useful as a		tudu mida fan tha		with this immediate		
full and the state of the state		study guide for the	professional dealing	with this importan	t area. There are	
This is strong in inclusion to do a				for a standard to a standard		
dissiplines this hair wasful as a		electrical energy sys	stems and intended	ior students and (		
following three sub-	everence and self-s	scudy guide for the	professional dealing	with this importan	Larea. Inere are	
Contents of elect	oose from.					
Sub Course I(R. Inada)		<b>D</b> .				
I. Introduction of Electrochemical	Energy Conversio	n Devices				
2. Lithium-Ion Secondary Batterie	es e e					
3. Recent Trend in Electrochemic	al Energy Conversi	on Devices				
Sub Course 2(Yo. Murakami)						
1. Introduction of Electric Energy	Systems					
2. High Voltage Engineering and E	lectrical Insulation					
3. Fundamental Properties of Diel	ectrics and Electric	cal Insulating Materi	als.			
Sub Course 1(R. Inada)						
1. Introduction of Electrochemical	Energy Conversio	n Devices				
2. Lithium-Ion Secondary Batterie	es					
3. Recent Trend in Electrochemic	al Energy Conversi	on Devices				
Sub Course 2(Yo. Murakami)						
1. Introduction of Electric Energy	Systems					
2. High Voltage Engineering and E	lectrical Insulation					
3. Fundamental Properties of Diel	ectrics and Electric	cal Insulating Materi	als.			
Self Preparation and Review		_				
To enhance a learning effect, stud	dents are encourag	ed to refer to their	textbox etc			
To prepare for and review the lec	ture for around 90	minutes each.				
To enhance a learning effect, stud	dents are encourag	ed to refer to their	textbox etc			
To prepare for and review the lec	ture for around 90	minutes each.				
Related subjects						
Basic electrical power engineering	g course is prerequ	isite.				
Basic electrical power engineering	g course is prerequ	isite.				
Notes for textbook						
Materials will be prepared by the	ecturer.					
Materials will be prepared by the	ecturer.					
Notes for reference						
Goals to be achieved						
Evaluation of achievement						

Mar	ks	are	based	l on	examina	atior	ns(100%).

Marks are based on examinations(100%). **Examination** 

定期試験を実施(対面)

Examination(Face to Face)
Details of examination

N/A

N/A

# Other information

N/A N/A

# Reference URL

(1) J. Larminie and A. Dicks: Fuel Cell Systems Explained (Wiley)

- (2) M. Yoshio, R.J. Brodd and A. Kozawa: Lithium Ion Batteries: Science and Technologies (Springer-Verlag)
- (3) E. Kuffel, W. Zaengel and J. Kuffel: High Voltage Engineering (Newnes)

(1) J. Larminie and A. Dicks: Fuel Cell Systems Explained (Wiley)

(2) M. Yoshio, R.J. Brodd and A. Kozawa: Lithium Ion Batteries: Science and Technologies (Springer-Verlag)
 (3) E. Kuffel, W. Zaengel and J. Kuffel: High Voltage Engineering (Newnes)

Office hours

Relations to attainment objectives of learning and education

Key words

# (M42630230)LSI Process 2[LSI Process 2]

Subject name[English]	LSI Process 2[LS	I Process 2]				
Schedule number	M42630230	Subject area	Advanced	Required or	Elective	
			Electrical and	elective		
			Electronic			
			Information			
			Engineering			
Time of starting a course	Spring term	Day of the week.period	Thu.2~2	Credit(s)	2	
Faculty	Graduate Program	n for Master's Degre	e	Subject grade	1~	
Department Offered	Electrical and Ele	ctronic Information	Engineering	Beggining	M1	
			5 5	grade		
Charge teacher name[Roman	澤田 和明,石川	靖彦, 関口 寛人	、野田 俊彦 SAW	ADA Kazuaki, ISHI	KAWA Yasuhiko,	
alphabet mark]	SEKIGUCHI Hirot	o, NODA Toshihiko				
Numbering	ELC_MAS54025					
Objectives of class						
From the viewpoint of deep unde	rstanding of LSI pro	ocesses, semicondu	ctors devices includ	ding material desgir	n and an example	
of latest device will be lectured.					-	
If there will be any changes rea	garding Tovohashi	University of Tech	nology Activity Res	strictions Level fo	r Preventing the	
Spread of Corona virus. the cours	se content and eval	uation of achieveme	ent are subject to ch	nange.		
From the viewpoint of deep unde	rstanding of LSI pro	ocesses, semicondu	ctors devices includ	ding material desgir	n and an example	
of latest device will be lectured.	- F'			- 8.		
If there will be any changes re-	arding Toyohashi	University of Tech	nology Activity Red	strictions level fo	r Preventing the	
Spread of Corona virus, the course	se content and eval	uation of achieveme	ent are subject to ch	nange.		
Contents of class						
Integrated circuits						
Sensor processing						
Optical devices						
MEMS/NEMS						
Latest MOS FETs						
Current topics in IC/MEMS/sens	or					
Integrated circuits						
Sensor processing						
Optical devices						
MEMS/NEMS						
Latest MOS FETs						
Current topics in IC/MEMS/sens	or					
Self Preparation and Review						
毎回の講義内容を復習するととも	に,次週の内容につ	ついてテキスト等を参	参考に予習してくるこ	22		
Review each lecture and prepare	for the next class v	with reference to th	e textbook.			
Related subjects						
The basic knowledge on the quan	tum mechanics, the	rmodynamics, and e	electronics are desir	able.		
Semiconductor Physics, Master c	ourse					
The basic knowledge on the quantum mechanics, thermodynamics, and electronics are desirable.						
Semiconductor Physics Master of	ourse					
Notes for textbook						
Physics of Semiconducotr Device	s					
S.M.Sze, Willy						
Physics of Semiconducotr Device	S					
S.M.Sze, Willy						
Notes for reference						
特になし						
N/A						

# Goals to be achieved (1) To understand fundamental aspects on LSI process, and semiconductor devices including material design. (2) To get the knowledge on the latest technologies on LSI process. (1) To understand fundamental aspects on LSI process, and semiconductor devices including material design. (2) To get the knowledge on the latest technologies on LSI process. **Evaluation of achievement** Reports (100%) Reports (100%) Examination レポートで実施 By Report **Details of examination** Other information K. Sawada (C-605) sawada@ee.tut.ac.jp Y. Ishikawa (C-607) ishikawa@ee.tut.ac.jp H. Sekiguchi (C-610) sekiguchi@ee.tut.ac.jp ext. 6744 T. Noda (C-611) noda-t@eiiris.tut.ac.jp ext. 6745 K.Sawada (C-605) sawada@ee.tut.ac.ip Y. Ishikawa (C-607) ishikawa@ee.tut.ac.jp H. Sekiguchi (C-610) sekiguchi@ee.tut.ac.jp ext. 6744 T, Noada (C-611) noda-t@eiiris.tut.ac.jp ext. 6745 **Reference URL** http://www.tut.ac.jp/english/introduction/02EE.pdf (department) http://www.int.ee.tut.ac.jp/ (devision) http://www.tut.ac.jp/english/research/research\_highlights.html (research activities) http://www.tut.ac.jp/english/introduction/02EE.pdf (department) http://www.int.ee.tut.ac.jp/ (devision) http://www.tut.ac.jp/english/research/research\_highlights.html (research activities) Office hours book an appointment by e-mail, phone, etc. book an appointment by e-mail, phone, etc. Relations to attainment objectives of learning and education (C)高度な知識を統合的・発展的に活用できる実践力・創造力 電気・電子情報工学およびその関連分野に関する高度な知識を修得し、それらを広範囲に有機的に連携させた研究開発方法 論を体得することで, 課題解決のための独創的な技術を創造し, 実践できる 能力を身につけている

(C) Practical and creative skills to utilize advanced knowledge in an integrated manner

Have advanced knowledge about electrical and electronic information engineering as well as related fields; have the practical and

creative skills toutilize such knowledge for problem solving in an integrated manner

Key words

# (M42630250)Information and Communication Technology 2[Information and Communication Technology 2]

Subject name[English]	Information and Communication Technology 2[Information and Communication Technolog							
Schedule number	M42630250	Subject area	Advanced Electrical and Electronic Information	Required or elective	Elective			
Time of starting a course	Spring term	Day of the week,period	Mon.3~3	Credit(s)	2			
Faculty	Graduate Program	n for Master's Degre	e	Subject grade	1~			
Department Offered	Electrical and Ele	ctronic Information	Engineering	Beggining grade	M1			
Charge teacher name[Roman	上原 秀幸,竹内	啓悟 UEHARA Hid	eyuki, TAKEUCHI K	eigo				
alphabet mark]								
Numbering	ELC_MAS55025							
Objectives of class								
Students select one course from	the following two c	ourses:						
A first course is intended for lea	arning mainly mediu	um access control,	multi-hop communi	cations and other	topics related to			
wireless networks. Students are r	required to give sol	utions of the probler	ms which cause per	formance degradat	ion.			
The other course is intended f	or learning point-t	o-point communica	tion systems, mult	iuser communicati	on systems, and			
multiple-input multiple-output (M	IIMO) systems in tl	ne physical layer of	wireless communic	ations. Students c	hallenge a unified			
understanding of existing advance	ed schemes in wirel	ess communications	S.					
Contents of class								
Course 1 provided by Prof. Uehar	ra:							
1. Medium access control protoco	ols							
2. Multi-hop communications								
3. Ad hoc and sensor networks								
Course 2 provided by Prof. Takeu 1. Point-to-point communication 2. Multiuser communication syste 3. MIMO systems If there will be any changes regar Preventing the Spread of Corona If there is any changes about a cl	uchi: systems ems ding Toyohashi Uni virus, the course c lass schedule, I will	versity of Technolog ontent and evaluati inform you on Goog	gy Activity Restricti on of achievement a gle Classroom or KY	ons Level for are subject to chan OMU JOHO SYST	ge. EM.			
Self Preparation and Review								
Review each lecture and prepare	for the next class	with reference to th	e handouts.					
Related subjects								
Students who register for this le below:	cture must pass a	n interview by the p	professors to check	that they satisfy	the prerequisites			
Prerequisite of Course 1: Sufficient knowledge about the f	ollowing: wireless d	igital modulation an	d demodulation rad	io propagation cha	racteristic signal			
processing, probability, random variables and stochastic process.								
Prerequisite of Course 2: Deep understanding on modulation/demodulation, signal processing, probability theory, and information theory is prerequisite. In particular, sufficient knowledge about probability theory is required. <b>Notes for textbook</b>								
Notes for reference								
N/A								
Goals to be achieved								
Course 1:								
<ul> <li>Understand the mechanism of r</li> <li>Understand the characteristics</li> </ul>	nedium access con of ad hoc and sens	troi and multi-hop c sor networks	communications					

- Present a solution or a new application for the above

Course 2:

- Understand the concept of detection, diversity, and channel uncertainty in point-to-point communication systems.

- Understand resource allocation and interference management in multiuser communication systems.

- Understand statistical channel models and basic multiuser detection schemes in MIMO systems.

# Evaluation of achievement

Course 1: Marks are based on reports and presentations.

Course 2: Marks are based on reports and tests.

Examination

定期試験を実施(対面) Examination(Face to Face)

Details of examination

N/A

#### Other information

For e-mail address information, visit http://www.comm.ee.tut.ac.jp/

# Reference URL

http://www.comm.ee.tut.ac.jp/

Office hours

Appoint a time slot via email

Relations to attainment objectives of learning and education

#### Key words

 $wireless\ networks,\ medium\ access\ control,\ multi-hop,\ wireless\ communications,\ modulation/demodulation,\ MIMO$ 

(M43610100)Supervised Research in Computer Science and Engineering[Supervised Research in Computer Science and Engineering]

Subject name[English]	Supervised Research in Computer Science and Engineering[Supervised Research in						
	Computer Scienc	e and Engineering]					
Schedule number	M43610100 Subject area Advanced			Required or	Required		
			Computer	elective			
			Science and				
			Engineering				
Time of starting a course	Spring term	Day of the	Intensive	Credit(s)	6		
		week,period					
Faculty	Graduate Program	n for Master's Degre	e	Subject grade	2~2		
Department Offered	Computer Science	e and Engineering		Beggining	M2		
				grade			
Charge teacher name[Roman	S3系教務委員, 3	3系各教員 3kei kyor	nu Iin−S, 3kei kakuk	youin			
alphabet mark]							
Numbering	CMP_MAS61015						
Objectives of class							
The course is intended for stude	nts to foster their i	nterests in research	problems on comp	uter science and e	ngineering and to		
acquire ability for independent st	udies.						
It is also aimed for students to ac	quire, through thes	is research, cooper	ativeness, a sense c	of responsibility, ab	ilities for problem		
solving, research planning, decisio	on making, outcome	presentation and s	ubject investigation,	and to enhance th	eir creativity and		
persistency, among others.							
Contents of class							
It is usually the case that thesis	research is carried	out on individual ba	ses with specific co	ntents differing fro	m one student to		
another.							
Consult with your advisor for any	further details.						
Self Preparation and Review							
Consult with your advisor for the	m.						
Related subjects							
Consult with your advisor for the	m						
Notes for textbook							
Consult with your advisor for the	m.						
Notes for reference							
Goals to be achieved							
To acquire abilities for doing res	search and develop	ment at technically	high level, sophist	icated decision ma	king, and leading		
large scale research projects.					5. 5		
Evaluation of achievement							
Will be evaluated by taking into a	account various fac	tors overall. such a	s technical explana	tion. question ansv	vering. discussion		
involvements and so on.			•	<i>·</i> •	5,		
[Evaluation basis] Students who	attend this class wi	ll be evaluated as fo	llows:				
S: Achieved the high level of "master degree", 90 or higher (out of 100 points).							
A: Left something to be desired, 80 or higher (out of 100 points).							
B: Left something to be desired,	ed, 70 or higher (out of 100 points).						
C: Left much to be desired, 60 or	or higher (out of 100 points).						
Examination							
試験期間中には何も行わない							
None during exam period							
Details of examination							
Other information							

# Reference URL

Office hours

#### Relations to attainment objectives of learning and education

(D) Communication skills for global success

Have the communication skills to effectively express one's own ideas and results while working on the issues faced by a globally changing society in cooperation with other team members

(D1) Have the skills to effectively express and communicate one's own ideas as well as points in question at home and abroad through papers, oral reports or information media

(D2) Have high-level skills to mutually respect the values of individual team members; and to contribute to the team's achievements through working cooperatively with other team members

Key words

#### (M43630080)Computers and Education[Computers and Education]

Subject name[English]	Computers and Education[Computers]	Computers and Education[Computers and Education]					
Schedule number	M43630080	Subject area	Advanced	Required or	Elective		
			Computer	elective			
			Science and				
			Engineering				
Time of starting a	Spring term	Day of the	Mon.5~5	Credit(s)	2		
course		week,period					
Faculty	Graduate Program for Master's De	Subject	1~				
				grade			
Department Offered	Computer Science and Engineerin	g		Beggining	M1		
				grade			
Charge teacher	河合 和久 KAWAI Kazuhisa						
name[Roman alphabet							
mark]							
Numbering	CMP_MAS52225						

Objectives of class

The purpose of the class is to deepen and broaden students' knowledge of their own expertise in relation to the society in learning about computers and technology in education.

## Contents of class

Students will be offered some overviews of computers and education. Students will give some presentations on the following problems: (1) to make the teaching plan of their own research subjects for pupils or junior high school students, (2) to make a simulated class based on the plan, (3) to discuss the simulated class. At the end of term, students are required to submit an essay on computers and education.

(on-demand) 1.Guidance, Lecture#1(Introduction to subject "Information".)

(on-demand) 2.Lecture#2(Computer system for education. and Software as course material.)

(on-demand) 3.Lecture#3(Cooperation with the period of integrated study.)

(on-demand) 4.Lecture#4(Simulated class: plan and evaluation.)

(on-demand) 5.Lecture#5(Keep an "Information" teacher. and Teaching plan.)

(on-demand) 6.Lecture#6(Information sending and presentation.) (on-demand) 7.Lecture#7(Group work by collaboration and presentation.)

(on-demand) 8.Lecture#8(Media literacy., Information ethics education. and Network.)

(on-demand) 8.Lecture#8(Media literacy., Information ethics education, and Network.) (remote simultaneous interactive) 9.Presentations of Teaching Plans #1

(remote simultaneous interactive) 10.Presentations of Teaching Plans #2

(on-demand) 11.Lecture#9(Expression of information and multimedia. and Topics in information society.)

(on-demand) 12.Lecture#10(Algorithm and programming. and Information retrieval and database.)

(remote simultaneous interactive) 13.Simulated Classes #1

(remote simultaneous interactive) 14.Simulated Classes #2

(remote simultaneous interactive) 15. Simulated Classes #3

(remote simultaneous interactive) 16.Presentations of Final Reports

If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. Self Preparation and Review

Students are required to solve the problems mentioned above. To enhance a learning effect, students are encouraged to refer to course material. To prepare for and review the lecture for around 90 minutes each.

Related subjects							
N/A							
Notes for textbook							
Students will be offered	some overview	s of "JOUHOUKA K`	YOUIKUHOU″ (th	e following reference	e) using WWW.		
Reference 1	Book title	JOUHOUKA KYOU	JIKUHOU (KAITEI	ISBN	978-4-274-		
		JAPANESE ***				21920-7	
	Author	Yasushi Kuno, et	Publisher	OHM-SHA	Publish year	2016	
		al.					
Notes for reference							
N/A							

## Goals to be achieved

At the end of the course, students will be able to deepen and broaden students' knowledge of their own expertise in relation to the society, and to represent them using computers and technology in education.

Evaluation of achievement
Weighting:
Reports 50%.
In class work 50%.
Grading scale:
90% and above S
80% - 89% A
70% - 79% B
60% - 69% C
Examination
授業を実施
Regular Class
Details of examination
N/A
Other information
N/A
Reference URL
http://www.ita.cs.tut.ac.jp/~kawai/kpe/ (Some pages are written in Japanese.)
Office hours
Office hours; Wednesday 2nd period and Friday 2nd period in Room F1-206.
Relations to attainment objectives of learning and education
Graduate Program of Computer Science and Engineering for Master's Degree.
(C) Practical and creative skills to utilize advanced knowledge in an integrated manner.
Have advanced knowledge about computer science and engineering as well as related fields; and have the practical and
creative skills to utilize suchknowledge for problem solving in an integrated manner.
(C1) Have the skills to voluntarily acquire theories and applied knowledge about computer science and engineering as well as related fields; and to utilize such knowledge in an integrated manner.

Key words

Informatics, Computer Literacy, Scientific Communication. Informatics, Computer Literacy, Scientific Communication.

# (M43630400)Molecular Simulation 1[Molecular Simulation 1]

Subject name[English]	Molecular Sim	ulation 1[Molecula	ar Simulation 1]		1		
Schedule number	M43630400		Subject area	Advanced	Required or	Elective	
				Computer	elective		
				Science and			
				Engineering			
Time of starting a course	Spring1 term		Day of the week,period	Tue.5~5	Credit(s)	1	
Faculty	Graduate Pro	gram for Master's	Degree		Subject grade	1~	
Department Offered	Computer Sci	ence and Enginee	ring		Beggining	M1	
-					grade		
Charge teacher	栗田 典之 KU	JRITA Noriyuki					
name[Roman alphabet							
mark]							
Numbering	CMP_MAS530	25					
Objectives of class							
The objective of this cla	ss is to underst	and basis biophys	sical nhenomena i	n the organisms has	ed on the conce	ent of quantum	
chemistry that is maleau	ular orbital (MO)	theory				ope of quantum	
In achieving this chiestiv	a atudanta will	ha required to att	ampt to poquiro t	ha alamantari, aanaa	nta in MO thaar	v and thay will	
						y, and they will	
The about the electronic	properties of t	piological molecule	es such as protein	s, RINA and DINA.			
ine objective of this cla	ss is to underst	and basis biophys	sical phenomena i	n the organisms bas	ea on the conce	ept of quantum	
chemistry, that is, moleci	ular orbital (MO)	theory.					
In achieving this objectiv	e, students will	be required to att	empt to acquire t	he elementary conce	epts in MO theor	y, and they will	
learn about the electroni	c properties of b	piological molecule	es such as protein	s, RNA and DNA.			
Contents of class							
Considering the prelimina	ary knowledge o	f the participates	in this class, som	e topics from the fo	llowing things wi	ll be chosen to	
be learned. All classes ar	e on-demand.						
<ul> <li>be learned. All classes are on-demand.</li> <li>(1) Basis and elementary concepts for molecular orbital (MO) theory (1st week)</li> <li>(2) Applications of MO method to small molecules (2nd week)</li> <li>(3) MO calculations for amino acids and their peptides (3rd week)</li> <li>(4) MO calculations for DNA, RNA bases and base pairs (4th week)</li> <li>(5) MO calculations for complexes with proteins and ligand molecules (5th week)</li> <li>(6) MO calculations for DNA, RNA and their complexes with proteins (6th, 7th weeks)</li> <li>If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.</li> <li>Considering the preliminary knowledge of the participates in this class, some topics from the following things will be chosen to be learned. All classes are on-demand.</li> <li>(1) Basis and elementary concepts for molecular orbital (MO) theory (1st week)</li> <li>(2) Applications of MO method to small molecules (2nd week)</li> <li>(3) MO calculations for zomplexes with proteins and base pairs (4th week)</li> <li>(5) MO calculations for complexes with proteins and base pairs (4th week)</li> <li>(6) MO calculations for complexes with proteins and ligand molecules (5th week)</li> <li>(6) MO calculations for DNA, RNA and their complexes with proteins (6th, 7th weeks)</li> </ul>							
Self Preparation and Rev	view						
Elementary concepts in	NO theory as we	ell as biomolecules	s such as proteins	, RNA and DNA are	required.		
Elementary concepts in I	10 theory as we	ell as biomolecules	s such as proteins	, RNA and DNA are	required.		
Related subjects	-		•				
特になし							
NZA							
Textbook1	Book title	<b>帚子生</b> 物学 λ ₱	٩		ISBN		
I SAUDUR I					10011		
	Author	永田親義	Publisher	学会出版センタ	Publish year	1993	
	TI				1	1	
---	-------------------------	---------------------	--------------------	---------------------	-----------------	-----------------	
		L		—		L	
Notes for textbook 教科書∶資料配付							
参考書:							
<sup>‴</sup> Molecular orbital calcula	itions for amino	acids and peptide	s″, by Anne−Marie	e Sapse			
"Molecular orbital calcula	ations for amino	acids and peptide	s″, by Anne-Marie	e Sapse			
Notes for reference							
特になし N/A							
Goals to be achieved							
The objective of this cla	ss is to underst	and basis biophys	sical phenomena i	n the organisms bas	ed on the conce	ept of quantum	
chemistry.							
The objective of this cla	ss is to underst	and basis biophys	sical phenomena i	n the organisms bas	ed on the conce	pt of quantum	
Evaluation of achievement	nt						
授業で与えられた課題に	対するレポートロ	内容で、総合的に	評価する。				
S:合計点が 90 点(100 点	点満点)以上。						
A:合計点が 80 点(100 g	点満点)以上。						
B:合計点が 70 点(100 g	点満点)以上。						
C:合計点が 60 点(100 g	<b>点満点)以上。</b>						
Evaluation is based on re	ports (100 point	.s).					
S: total points of reports	, 90 or higher (οι	ut of 100 points).					
A: total points of reports	, 80 or higher (ou	ut of 100 points).					
B: total points of reports	, 70 or higher (ou	ut of 100 points).					
C: total points of reports	, 60 or higher (oi	ut of 100 points).					
Examination レポートで実施							
By Report							
Details of examination							
特になし							
N⁄A							
Other information							
連絡先							
教員の居室:F棟 306 号	室						
電話番号:0532-44-68	\$75						
E-mail: kurita@cs.tut.ac.jp	D						
E-mail: kurita@cs.tut.ac.jp	0						
特になし							
ト記のE-mailによる演奏	タに トリ 済安計	ウオス					
上記の E-Indii による連載 Please contact by the ab	回こより、過且列 Nove F-mail	<i>I</i> L> Y る。					
Relations to attainment of	objectives of lea	rning and educati	on				
(C1) 情報・知能工学およ	:びその関連分野	予の理論・応用知詞	識を自発的に獲得	し、それらを統合的	に活用できる能ス	りを身につけて	
いる。							
(C1) Have the skills to v	oluntarily acquir	e theories and ar	oplied knowledge a	bout computer scie	nce and enginee	ring as well as	
related fields; and to utili	ze such knowled	lge in an integrate	d manner	,	0.11	<b>C</b>	
Key words							
DNA, RNA, Protein, mole	cular orbital calc	culation					
DNA, RNA, Protein, mole	cular orbital calc	ulation					

# (M43630410)Molecular Simulation 2[Molecular Simulation 2]

Subject	Molecular Si	mulation 2[Molecul	ar Simulation 2]			
nametengiisnj Sebedule number	M42620410		Cubic at area	Advanced	Dogwinod on	Elective
Schedule number	WI43030410		Subject area	Computer	Required or	Elective
				Solonoo and	elective	
				Engineering		
Time of starting a	Spring? torm		Day of the		Credit(c)	1
nine of starting a	Springz term		week period	Tue.5 5	Or Buil(8)	1
Feaulty	Graduate Pr	ogram for Master's	Degree		Subject	1~
raculty	Graduate i fi		Degree		grade	1
Department Offered	Computer So	cience and Enginee	ring		Beggining	M1
Dopar anone onoroa	Computer et				grade	
Charge teacher	後藤 仁志(	GOTO Hitoshi			Brade	
name[Roman alphabet						
mark]						
Numbering	CMP MAS53	025				
Objectives of class	_					
	かた今か公子と	5右機物の特性を3	予測するために体E	ヨさわる古曲カ学べ	<u>_</u> 7の分子いろ	っしーションの其
	ッ2 日 0 万 1 、 	一口版物の特定を	解することです		X0/11/2	エレ ノヨノの巫
この日標を達成するため	カに 受講生け	ルで日照30家と4 - 分子力学(MM)お	上が分子動力学(	MD) 法の基本的な知	□識を学び、分⊒	と計省プログラム
(アプリケーション)をい	った、文碑工は - たすために必	(1) 万子(1007/05)	ます ます			
The goal of this class i	is to learn the	basic science of	classical mechanic	s-based molecular	simulations use	ed to predict the
properties of molecules	and organic r	natter including liv	ving organisms and	d to understand nat	tural phenomen	a on a molecular
atomic scale		naccor, morading in	ing organisms, an			
To achieve this goal, s	students will le	earn the basic kno	owledge of molecu	lar mechanics (MM	) and molecula	r dynamics (MD)
methods, and acquire th	e techniques r	necessary to use m	nolecular calculatio	n programs (applicat	tions).	-,,
Contents of class	<u> </u>	·····, ····				
受講生は次の項目のト	<sup>ペ</sup> ックを学びま <sup>・</sup>	व				
(1)分子シミュレーション	- / / と / 0 い	8)				
(1)分子力学(MM)法お	よびローカル/	☆ グローバル最小検	索法(2 週日および)	(3週日)		
(3)分子動力学(MD)法	と運動方程式	(4 调日と5 调日)				
(4)統計熱力学と観測さ	れた振動数の	比較(6週目)				
(5)古典力学のノーマル	モード振動解	折とパラメータ最適	化(7週目)			
ほとんどすべての講義に	は、同時双方向	またはオンデマン	ドのオンライン会議	システムを使って行	われます。	
Students will learn the t	opics of the fo	llowing things:				
(1) Outline of molecular	simulation (1s	t week)				
(2) Molecular mechanics	s (MM) method	and local/global m	ninimum search me <sup>.</sup>	thod (2nd and 3rd w	eeks)	
(3) Molecular dynamics	(MD) method a	nd motion equation	n (4th and 5th wee	ks)		
(4) Statistical thermody	namics and co	mparison of vibrati	onal frequencies of	oserved (6th week)		
(5) Normal mode vibration	onal analysis a	nd parameter optin	nization for the cla	ssical mechanics (7t	th weeks)	
Almost all lectures will b	be conducted i	n a simultaneous b	idirectional or on d	emand online meeti	ng system.	
Self Preparation and Re	oview					
各授業回毎に 60 分のう	予習と90分の	復習が必要です。				
60-minute preparation a	and 90-minute	review are require	d for each lecture.			
Related subjects						
分子シミュレーション特語	<b>淪1</b>					
Molecular Simulation 1						
Notes for textbook						
PDF ドキュメントは学習	管理システム(	LMS)によって配布	iされます			
PDF documents will be	distributed by	learning manageme	ent system (LMS)			
Reference 1	Book title	Introduction to (	Computational Cha	mistry 3nd Ed	ISBN	978-
	DOOK GUO			mistry, ond Lu.		1118825990
	Author	Frank Jensen	Publisher	Wiley	Publish veer	2016
Notes for reference	700101				i abnon yoal	2010

N/A
Goals to be achieved
(1)古典力学に基づく分子シミュレーションの基礎理論を理解する。
(2)計算の妥当性を判断することができる。
(3)計算結果の検証ができる。
(1) Understand the basic theory of molecular simulation based on classical mechanics.
(2) The validity of the calculation can be judged.
(3) The verification of the calculation result can be performed.
Evaluation of achievement
【評価基準】全授業に参加する学生は、以下のように評価されます。
S:すべての目標を達成し、試験とレポートの総合点を 90 点以上(100 点中)獲得する。
A:目標の 80%を達成し、試験とレポートの総合点を 80 点以上(100 点中)獲得する。
B:目標の 65%を達成し、試験とレポートの総合点を 70 点以上(100 点中)獲得する。
C:目標の 50%を達成し、試験とレポートの総合点を 60 点以上(100 点中)獲得する。
[Evaluation basis] Students who attend all classes will be evaluated as follows:
S: Achieved all goals and obtained total points of exam and reports, 90 or higher (out of 100 points).
A: Achieved 80% of goals and obtained total points of exam and reports, 80 or higher (out of 100 points).
B: Achieved 65% of goals and obtained total points of exam and reports, 70 or higher (out of 100 points).
C: Achieved 50% of goals and obtained total points of exam and reports, 60 or higher (out of 100 points).
Examination
授業を実施
Regular Class
Details of examination
特になし。
N/A
Other information
特になし。
N/A
Reference URL
特になし。
N/A
Office hours
事前に電子メールで連絡してください。
Please contact by E-mail in advance.
Relations to attainment objectives of learning and education
Key words
Molecular Mechanics, Molecular Dynamics, Quantum Chemistry, Quantum Mechanics, Chemoinformatics

(M43030400)Statistica	I Machine Learning Theory[Statistic:	al Machine Learni	ng Theory]		
Subject name[English]	Statistical Machine Learning Theo	ry[Statistical Mac	hine Learning Theo	ory]	
Schedule number	M43630460	Subject area	Advanced Computer Science and Engineering	Required or elective	Elective
Time of starting a course	Spring2 term	Day of the week.period	Thu.2~2	Credit(s)	1
Faculty	Graduate Program for Master's De	egree	L	Subject grade	1~
Department Offered	Computer Science and Engineering	g		Beggining	M1
Charge teacher name[Roman alphabet mark]	渡辺 一帆 WATANABE Kazuho			8.444	I
Numbering	CMP_MAS52425				
<b>Objectives of class</b> 機械学習手法はパター 本講義では、統計的推 The objective of this of has wide applications s	-ン認識・データマイニング等の基本 :測としての機械学習手法の基本原理 course is to learn the fundamental t such as pattern recognition and data	支術として幅広く成 星や性質を理解す theory of statistic mining.	5用されている。 ることを目標とする。 cal machine learning	° g as statistical	inference, which
<ul> <li>(対面)</li> <li>第1週:#</li> <li>(オンデマンド)第2週:</li> <li>(対面)</li> <li>第3週:#</li> <li>(オンデマンド)第4週:</li> <li>(対面)</li> <li>第5週:^</li> <li>(オンデマンド)第6週:</li> <li>(対面)</li> <li>第7週:糸</li> <li>(オンデマンド)第8週:</li> </ul>	既論, 確率モデルの基礎 最尤推定, 推定量の性質 削別モデル, 最適化法 正則化, モデル選択 ベイズ学習, サンプリング法 潜在変数モデル, EM アルゴリズム 経験ベイズ法, 近似ベイズ学習 統計的学習理論				
本学の新型コロナウイ. があります。 (face-to-face) 1. Intro (on-demand) 2. Maxi (face-to-face) 3. Discr (on-demand) 4. Regu (face-to-face) 5. Baye (on-demand) 6. Late (face-to-face) 7. Empi (on-demand) 8. Stat	ルス感染拡大防止のための活動基準 duction, Fundamentals of Probabilisti imum Likelihood Method, Properties of iminative Model, Optimization Metho ularization Methods, Model Selection isian Learning, Sampling Method nt Variable Model, EM Algorithm rical Bayes Method, Approximate Bay istical Learning Theory	售の変更に伴い、 c Models of Estimator ds yesian Learning	授業内容および成約	績の評価法に変 I evel for	E更が生じる場合
If there will be any cha Preventing the Spread Self Preparation and F	nges regarding Toyohashi University of Corona virus, the course content <b>Review</b>	of Technology Ad and evaluation of	ctivity Restrictions f achievement are s	Level for subject to chang	ge.
谷回の内容を参考書ま It is desirable to prepa (90 min.). Related subjects 特になし	F C F 白しいの オル 小洟首やての類	睦されを首 9 る (90 books (90 min.) a	ת י ס	ss by solving as	signed exercises

N⁄A

Notes for textbook 講義スライドを配布

Lecture slides are distributed

	distributed.					
Reference1	Book title	Information theory	, inference, and	learning algorithms	ISBN	978-
			1	1		0521642989
	Author	David J.C.	Publisher	Cambridge	Publish	2003
		MacKay		University	year	
Poforonoo?	Book title	Pottorn recognitio	n and machina k	Press	ISBN	070_
Nelerencez	BOOK LILLE	Fattern recognitio		earning	ISBN	0387310732
	Author	Christopher M	Publisher	Springer	Publish	2006
	/ duilor	Bishop		opringoi	vear	2000
Reference3	Book title	Algebraic geometr	y and statistical	learning theory	ISBN	978-
			-	<b>.</b> .		0521864671
	Author	Sumio Watanabe	Publisher	Cambridge	Publish	2009
				University	year	
				Press		
Notes for referenc	0					
特になし						
N/A						
Goals to be achiev			_			
1)代表的な機械学	習手法についての	D基本的な知識と理解	4 •			
2) 基本的な確率モ	テルと字習法につ	いて字習アルゴリス	ムが導出できる	こと		
3) 字省法の汎化性	E能について基礎的	りな理解を得ること				
1) Fundamental Kno	owledge and under	standing of popular r	nachine learning	methods	da	
2) Ability to derive 2) Eurodemontal up	devetopding of con	s for fundamental pro	o of loorning mo	s and learning metric	Jus	
	derstanding of gen		is of learning file	chous		
Evaluation of achie	vement					
レポートにより評価	する。					
評価基準:原則的(	こすべての講義に	出席したものにつき、	下記のように成	績を評価する。		
S:達成目標をすべ	て達成しており、た	かつレポートの点(100	) 点満点)が 90」	点以上		
A:達成目標を80	%達成しており、た	かつレポートの点(10	0 点満点)が 80	点以上		
B:達成目標を 60	%達成しており、 カ	かつレポートの点(100	) 点満点)が 70	点以上		
C:達成目標を40	%達成しており、 カ	かつレポートの点(10	0 点満点)が 60	点以上		
Scores will be mea	sured comprehens	sively by the points o	f the small exerc	cises assigned in sev	eral classes:	
[Evaluation basis]	Students who atte	nd all classes will be	evaluated as fol	llows:		
S: Achieved all goa	Is and obtained av	verage points of the r	eport, 90 or high	ner (out of 100 points	s).	
A: Achieved 80 % o	f goals and obtain	ed points of the repo	rt, 80 or higher (	(out of 100 points).		
B: Achieved 60 % o	f goals and obtain	ed points of the repo	rt, 70 or higher (	(out of 100 points).		
C: Achieved 40 % o	t goals and obtain	ed points of the repo	rt, ou or nigner (	(out of 100 points).		
Examination						
授業を実施						
Regular Class						
Details of examinat	tion					
特になし						
N⁄A						
Other information						
特になし						
N/A						
Reference URL						
特になし						
N/A						
随時(必要に応じ e	-mail 寺で日時を打	しち合わせる)				
as needed (contact	t via email etc. if n	needed)	•			
Relations to attain	ment objectives o	τ learning and educat	nou			

(C)高度な知識を統合的に活用できる実践力・創造力
 情報・知能工学およびその関連分野に関する高度な知識を修得し、それらを課題解決のために統合的に活用できる実践的・創造的能力を身につけている。
 (C1)情報・知能工学およびその関連分野の理論・応用知識を自発的に獲得し、それらを統合的に活用できる能力を身につけている。

(C) Practical and creative skills to utilize advanced knowledge in an integrated manner Have advanced knowledge about computer science and engineering as well as related fields; and have the practical and creative skills to utilize suchknowledge for problem solving in an integrated manner

(C1) Have the skills to voluntarily acquire theories and applied knowledge about computer science and engineering as well as related fields; and to utilize such knowledge in an integrated manner

## Key words

機械学習, 統計的推測, 統計的学習理論

Machine Learning, Statistical Inference, Statistical Learning Theory

(M43630540)Computational Intelligence in Brain System[Computational Intelligence in Brain System]

Subject name[English]	Computational Int	elligence in B	rain S		al Intelligence in Br	ain Svstem]
Schedule number	M43630540	Subject area	a	Advanced	Required or	Elective
			4	Computer	elective	LICOLIVO
				Science and	0.000.00	
				Engineering		
Time of starting a course	Spring1 term	Day of	the	Wed.3~3	Credit(s)	1
		week,period				
Faculty	Graduate Progran	n for Master's	Degre	e	Subject grade	1~
Department Offered	Computer Scienc	e and Enginee	ring		Beggining grade	M1
Charge teacher name[Roman	村越 一支 MURA	KOSHI Kazus	hi		0	
alphabet mark]						
Numbering	CMP_MAS53125					
Objectives of class						
The aim of this class is to unders	tand complex and i	ntelligent syst	ems.			
To achieve the aim, this class off	ers knowledge and	skills for math	emati	cal modeling and sin	nulation methods.	
Contents of class						
「本学の新型コロナウィルス感染	拡大防止のための	活動基準の変	更に	伴い、授業内容およ	こび成績の評価法に	ニ変更が生じる場
合があります。」						
授業実施形態が変更になる場合	は, GoogleClassroo	m または教務	情報	ンステムより通知しま	<b>きす</b> 。	
A. Introduction						
What is complex and intelligent sy	stems? Outline of	the brain syste	em.			
B. Computational Neuroscience a	nd Application-orie	ented Mathema	atical	Models		
What is computational Neuroscier	nce and artificial ne	ural networks?	?			
C. Model Neurons						
Structure of neurons, synapse, m	odel neurons.					
D. Learning at connected part of	neurons (synapse)					
Synaptic plasticity, spike-timing-	dependent plasticity	y (STDP).				
E. Simulation Methods						
Numerical calculation methods fo	r single neuron, neu	ıral network fr	om si	ngle neuron.		
F. Simulation Environments						
Explanation and demonstration of	simulation environ	ments such as	s NEU	RON and GENESIS.		
G. Self-organizing						
What is self-organizing? Winner T	akes All, Self-orgar	nizing map (SC	) (M			
H. Reinforcement Learning						с . ш
What is reinforcement learning,	reinforcement leari	ning in the br	ain, d	emonstration of re	inforcement learnir	ng for controlling
robot						
I. Summary						
(face to face) Ist week: A						
(on-demand)2nd week: B						
(on-demand)3rd week. C						
(face to face) 5th week: D						
(an-demand)6th week: G						
(face to face)7th week: H I						
Self Preparation and Review						
Related subjects						
Notes for textbook						
Handouts are distributed.						
Notes for reference						
Goals to be achieved						
<ul> <li>Know complex and intelligent m</li> </ul>	nathematical models	s, and underst	and t	hem at the degree v	which you can simu	Ite them by your

programming or by using simulation environment.

- Can explain technical terms of complex and intelligent mathematical models.
- Master numerical calculation methods that are used in complex and intelligent mathematical models.

## Evaluation of achievement

Report 100% + alpha (Consideration, comment, and opinion in each content (A-H))

Examination

その他 Other

### Details of examination

#### Other information

Even school year: Murakoshi, F-507, ext. 6899, mura [at] tut.jp

### **Reference URL**

N/A

Office hours

After this class or

post question or consultation to the google classroom.

Relations to attainment objectives of learning and education

(C) Practical and creative skills to utilize advanced knowledge in an integrated manner

Have advanced knowledge about computer science and engineering as well as related fields; and have the practical and creative skills to utilize such knowledge for problem solving in an integrated manner

(C1) Have the skills to voluntarily acquire theories and applied knowledge about computer science and engineering as well as related fields; and to utilize such knowledge in an integrated manner

Key words

# (M44630100)Special Topics in Applied Organic Chemistry[Special Topics in Applied Organic Chemistry]

Subject name[English]	Special Topics in	Applied	Organ	ic Ch	emistry[Special Tor	nics in Applied	1 Orga	anic Chemistry]
	M44630100	Subio				Pequired		Elective
	MI44030100	Subjec		a	Annlied	elective	or	LIEGUVE
					Applieu Chamiatra and	01000140		
					Life Seiemee			
Time of starting a source	Savinal tarma	Davi	- <b>F</b>	44.0	Tue Science	Ore dit(a)		1
Time of starting a course	Spring i term	Day	or neriod	the	Tue.5~5	Great(s)		1
Faculty	Graduate Program	n for Ma	ster's	Degre	e	Subject gra	de	1~
Department Offered	Applied Chemistr	v and Lif	fe Scie	ence		Beggining	uo	ч М1
Dopartinone onorod		y and En		51100		grade		
Charge teacher name[Roman	柴富 一孝 SHIB/	атомі к	(azuta	ka		8.000		
alphabet mark]								
Numbering	CHF MAS52225							
Objectives of class								
To provide you with a working kny	wledge of advance	d cynthe	acic of	molo	oular materials			
Contents of class	Swieuge of advance	u synthe	5515 01	mole	cular materials.			
	£							
(face to face ) 1. Basic concept of	f asymmetric syntr	iesis.						
(race to race ) 2. Basic concept of	T Lewis acid cataly	SIS.						
(on-demand) 3. Advanced Lewis a	icid catalysis.							
(face to face ) 4. Basic concept o	f organocatalyst.							
(on-demand) 5. Advanced organo	catalysis in organic	synthes	is.					
(face to face ) 6. Asymmetric syn	thesis of halogenat	ed comp	ounds	S.				
(on-demand) 5. Advanced asymm	etric synthesis.							
If there will be any changes regar	ding Toyohashi Uni <sup>,</sup>	versity o	of Tecl	hnolog	y Activity Restricti	ons Level for		
Preventing the Spread of Corona	virus. the course c	ontent a	nd ev	aluatio	on of achievement a	are subiect to	chan	ge.
5 1	,					5		5
If there is any changes shout a sl	aaa aabadula it wil	المم أسرام	م م م					TEM
If there is any changes about a ci	ass schedule, it will		rmea	via Go	ogle Glassroom or		5 513	
Sen Preparation and Review								
Preparation and review of the cla	sses are strongly re	ecomme	nded					
e g 90 min for the preparation an	d 90 min for the rev	view ner	each	90 mi	n class			
o.g. oo hiin for allo proparation all		non por	ouon	00 111				
Balatad aukiaata								
Related subjects	tatua (							
Subjects related to Organic Chen	listry							
No textbook is required.								
Some of information in WebCT wi	ll be help for your ı	understa	nding	on thi	s course.			
Notes for reference								
N⁄A								
Goals to be achieved								
A firm understanding on catalyst	, stereochemistry,	reactio	n mec	hanisı	n, and their applica	ation for the	synth	esis of molecular
materials is achieved.								
Evaluation of achievement								
The report on papers from scient	ific journals such a	s J.A.C.S	S and J	Angew	. Chem. will be imp	osed.		
[Evaluation basis] Students who	attend all classes w	vill be eva	aluate	d as f	ollows:			
S: Achieved all goals and obtained	total points of exa	am and r	eports	s. 90 n	r higher (out of 100	) points).		
A: Achieved 80 % goals and obtain	ed total points of e	exam and	d reno	rts. 80	) or higher (out of 1	00 points)		
B: Achieved 70 % of goals and obt	ained total points of	ofexam	and re	eporte	70 or higher (out o	of 100 points)		
C: Achieved 60 % of goals and obt	ained total points (	of exam	and re	porte	60 or higher (out o	of 100 nointe)		
Framination		c. chairt			ee of manor (out t			
Dy report								
Details of examination								
N/A								
Other information								

For more information:	
Kazutaka Shibatomi: room (B-507), e-mail (shiba@ens.tut.ac.jp)	
Reference URL	
http://www.siorgchem.ens.tut.ac.jp/index.html	
http://ens.tut.ac.jp/orgchem/	
Office hours	
anytime.	
Relations to attainment objectives of learning and education	
C1	
Karamada	
Key words	
molecular catalyst, asymmetric synthesis, Lewis acid	

# (M44630110)Developmental Neuroscience[Developmental Neuroscience]

Subject name[English]	Developmental Ne	euroscier	nce[D	evelop	omental Neuroscien	ce]	
Schedule number	M44630110	Subject	ct area	a	Advanced	Required or	Elective
					Applied	elective	
					Chemistry and		
					Life Science		
Time of starting a course	Spring2 term	Day	of	the	Tue.2~2	Credit(s)	1
<b>F</b> 1.	0	week,p	period	<u> </u>		<u>.</u>	1
Faculty	Graduate Progran	n for Ma	sters	Degre	e	Subject grade	1~ 
Department Offered	Applied Chemistry	y and Lif	e Scie	ence		Beggining grade	MI
Charge teacher name[Roman	吉田 祥子,沼野	利佳 Ye	OSHI	DA Sa	chiko, NUMANO Ril	(a	
alphabet mark]							
Numbering	CHE_MAS53225						
Objectives of class							
Objective of class is to develop	a new technology	for det	ection	of n	euronal function in	your brain. We de	eal with neuronal
property and development of neur	ronal circuit, and dis	scuss ap	plicab	ility a	nd problem of your	ideas.	
Contents of class							
S Yoshida,							
Week1 (remote simultaneous inter	ractive): Properties	of neuro	onal c	ells			
Week2 (remote simultaneous inter	ractive): Electrical f	unction	and io	n trar	isport		
Week3 (remote simultaneous inter	ractive): Chemical i	nformatio	on tra	nspor	t		
Week4 (remote simultaneous inter	ractive): Developme	ent of ne	urona	l circı	iit		
Week5 (remote simultaneous inter	ractive): Detection	of chemi	ical in	forma	tion		
Week6 (remote simultaneous inter	ractive): Detection	of electr	rical in	forma	tion		
Week7 (remote simultaneous inter	ractive): Detection	of cortic	al dev	elopm	nent		
R Numano,							
We pick up topics from chapter2 i	n Neuron To Brain	4th Ed.					
(8)Neural inducer in vertebrates	face to face (Regul	ar face t	to face	e clas	s)		
(9)Notch and Delta genes on-der	mand(You can take	the clas	s whe	never	you want.)		
(10)Polarity and Segmentation on	-demand(You can t	ake the	class	whene	ever you want.)		
(11)Hox gene function in the nerv	ous system on-den	nand(You	u can	take t	he class whenever	you want.)	
(12)Hox gene function in the nerv	ous system on-den	nand(You	u can	take t	he class whenever	you want.)	
(13)Topic & Discussion face to fa	ace face to face (R	egular fa	ice to	face	class)		
If there will be any changes regard	ding Toyohashi Univ	versity o	f Tecł	nnolog	y Activity Restricti	ons Level for	
Preventing the Spread of Corona	virus, the course c	ontent a	nd eva	aluatio	on of achievement a	ire subject to chan	ge.
Self Preparation and Review							
学習効果を上げるため,教科 書	等の該当箇所を参考	考し, 授き	業内容	に関	する予習(90 分程度	ぎ)を行 い, 授業内	国容に関する復習
(90 分程度)を行うことが望ましい。							
90 minutes of preparation and 90	minutes of review a	are gene	rally r	equire	d for each class of	90 minutes.	
Related subjects							
A firm understanding on fundamer	ntal biochemistry ar	nd therm	iodyna	mics	will be necessary.		
Web-based text will be distributed	J						
Web-based text will be distributed	1.						
		0001)					
From Neuron To Brain 4th Ed, Nic	cholls et. al. (Sinaue	er, 2001)					
1寸になし							
N/ A Coole to be achieved							
uoais to be acriteved 1)号车の抽奴封営の珊瑚							
1) 取初の仲裕件子の理解 の用本の利学が声声する問題を判	目わし 猫白云来家	オス					
2) 玩住の科子が直面9 る问題を抗	モルし、独日じろ祭	୬ ବିଂ					
1) You can understand neuroscier	nce Topics .						
2) You can consider the problem	in life science.						

#### Evaluation of achievement

#### Yoshida S.

### Report: 100%

S: Achieved all goals and obtained points of reports and discussions, 90 or higher (out of 100 points).

A: Achieved several goals and obtained points of reports and discussions, 80 or higher (out of 100 points).

- B: Achieved two goals and obtained points of reports and discussions, 70 or higher (out of 100 points).
- C: Achieved one goal and obtained points of reports and discussions, 60 or higher (out of 100 points).

#### Numano

#### Term report; 100%

- S: Achieved all goals and obtained points of reports and discussions, 90 or higher (out of 100 points).
- A: Achieved several goals and obtained points of reports and discussions, 80 or higher (out of 100 points).
- B: Achieved two goals and obtained points of reports and discussions, 70 or higher (out of 100 points).
- C: Achieved one goal and obtained points of reports and discussions, 60 or higher (out of 100 points).

### Examination

レポートで実施 By Report

#### **Details of examination**

### Other information

S Yoshida Room: B-301B, E-mail:syoshida@tut.jp R Numano

Room: G-407, E-mail:numano@tut.jp

### Reference URL

特になし

# N⁄A

Office hours

### Make an appointment by e-mail.

#### Relations to attainment objectives of learning and education

(C)高度な知識を統合的に活用できる実践力・創造力

応用化学・生命工学およびその関連分野に関する高度な知識を修得し,それらを課題解決のために統合的に活用できる実践 的・創造的能力を身につけている。

>>(C1) 応用化学・生命工学およびその関連分野の理論・応用知識を自発的に獲得し、それらを統合的に活用できる能力を身につけている。

>>(C2) 応用化学・生命工学およびその関連分野の広範囲の知識の連携により,研究開発に対する方法論を体得して,研究開発の計画を立案および実践し,課題解決のための新たな技術を創造できる能力を身につけている。

>>(D1) 論文, 口頭及び情報メディアを通じて, 自分の論点や考えなどを国の内外において効果的に表現・発信し, コミュニケーションする能力を身につけている。

(E)最新の技術や社会環境の変化に対する探究心と持続的学習力

社会,環境,技術等の変化に対応して,生涯にわたって自発的に計画し学習する能力を身につけている。

(C) Practical and creative skills to utilize advanced knowledge in an integrated manner

Have advanced knowledge about applied chemistry and life science as well as related fields; and have the practical and creative skills to utilizesuch knowledge for problem solving in an integrated manner

(C1) Have the skills to voluntarily acquire theories and applied knowledge about applied chemistry and life science as well as related fields; and to utilize such knowledge in an integrated manner

(C2) Have the skills to learn, by experience, methodologies for research and development through integrating extensive knowledge about applied chemistry and life science as well as related fields; to make plans for research and developmentand put them into practice; and to create new technologies to solve problems

(D1) Have the skills to effectively express and communicate one's own ideas as well as points in question at home and abroad through papers, oral reports or information media

(E) Inquisitive outlook and skills for continuous learning in response to state-of-the-art technology and changes in the social environment

Have the skills to voluntarily make plans and learn throughout one's life in response to changesin society, environment and

technology	
Key words	
Neuroscience	

# (M44630180)Advanced Reaction Engineering[Advanced Reaction Engineering]

Schedule number         M44830180         Subject area not applied the schemetry and Life Science         Applied Applied (Dramitty and Life Science         Required or science         Elective schemetry and Life Science         Required science         Credit(a) applied the schemetry and Life Science         Elective schemetry arade         Image: Im	Subject name[English]	Advanced Reaction	on Enginee	ring[Adva	nced Reaction Engi	neering]	
Image         Image         Applied Chamitry and Life Science         Service True 2************************************	Schedule number	M44630180	Subject	area	Advanced	Required or	Elective
Image:					Applied	elective	
Image         Life Science week,period week,period fraultate Program for Master's Degree         Cradit(s)         1           Faculty         Graduate Program for Master's Degree         Bugding         MI           Department Offered         Applied Chemistry and Life Science         Bugding         MI           Charge teacher name[Rom alphabet mark]         MI         Bugding         MI           Digettee         UHE_MASS2225         UHE_MASS225         UHE_MASS225           Digettee of class         Midettee of the grading         Midettee of the grading         Midettee of the grading           This course will provide students with the opportunity to understand the basic reaction mechanisms in combustion or atmosphere will be also discussed.         Server Science         Especially, especimental and theoretical treatment of reaction rate constants will be given. Some reaction mechanisms in combustion or atmosphere will be also discussed.         Server Science         Server Science           Contents of class         Introduction.         Server Science         Server Science         Server Science           S. Reaction rate theory. (2)         Server Science         Server Science         Server Science         Server Science           S. Reaction rate theory. (3)         Summary         Server Science         Server Science         Server Science           S. Reaction rate theory. (3)         Summary					Chemistry and		
Time of starting a course         Spring1 term         Day of the wate, provide         Thu 2~2         Credit(s)         1           Faculty         Graduate Program for Mastar's Degree         Subject grade         1~           Department Offored         Applied Chemistry and Life Science         Beggining grade         Mill           Charge teacher name[Roman alphabet mark]         /h□ 瑞夫 OGUCHI Tatsuo         Beggining grade         Mill           Numbering         CHE MASS2225         Overall Applied Chemistry and Life Science         Beggining grade         Mill           Objectives of class         This course will provide students with the opportunity to understand the basic reaction kinetics and dynamics. Especially, experimental and theoretical treatment of reaction rate constants will be given. Some reaction mechanisms in combustion or atmosphere will be also discussed.         Contents of class           1. Introduction.         2. Chemical reaction and rate theory.         3. Reaction rate theory. (2)         7. Reaction rate theory. (2)           2. Reaction rate theory. (2)         2. Reaction rate theory. (2)         7. Reaction rate theory. (3)         8. Summary           All lectures will be given as "In-person" style (Regular face to face class)         If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Gorona virus, the course content and avaluation of achievement are subject to change.         1. Introduction					Life Science		
Image         Image         Image         Image           Department Offered         Applied Chemistry and Life Science         Beggining grade         Image           Charge teacher name[Roman applied Chemistry and Life Science         Beggining grade         M1           aphabet nam()         CHE MASS2225         Units applied Chemistry and Life Science         Units applied Chemistry application and chemistry applied Chemistry applied Chemistry appli	Time of starting a course	Spring1 term	Day o	of the	Thu.2~2	Credit(s)	1
Faculty         Graduate Program for Master's Degree         Subject price         File           Department Offered         Applied Diremstry and Life Science         Begining grade         M1           Charge tascher name(Roman sightabet mark)         小口 注天 OGUCHI Tatuo         M1           Objectives of class         CHE_MAS52225	To contract	Que durate Due more	week,pe	riod		Outlinet much	1
Paper Contensor Orderoid     Applied Contensity and Life Science     peggning     prid     provide students with the opportunity to understand the basic reaction kinetics and dynamics. Especially, experimental and theoretical treatment of reaction rate constants will be given. Some reaction mechanisms in combustion or atmosphere will be also discussed.     This course will provide students with the opportunity to understand the basic reaction kinetics and dynamics. Especially, experimental and theoretical treatment of reaction rate constants will be given. Some reaction mechanisms in combustion or atmosphere will be also discussed.     Contents of class     This course before theory.     Contents of class     Thermodynamics of reaction.     S. Reaction rate theory.     S. Summary     All lectures will be given as "In-person" style (Regular face to face class)     If there will be also reaction,     S. Reaction rate theory.     S. Summary     All lectures will be given as "In-person" style (Regular face to face class)     If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for     Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.     I. Introduction.     S. Reaction rate theory.     Reaction rectainse reaction.     S. Reaction rectainse reaction.     S. Reaction react theory.     Reaction rectainse reaction.     S. Reaction react theory.     Reaction rectainse reaction.     S. Reaction react theory.	Faculty	Graduate Progran	n for Maste	ers Degr	e	Subject grade	~ 
Charge teacher name@Roman         小口 違夫 OGUCHI Tatsuo           alphabet marXi         OHE MAS52225           Objectives of class         This course will provide students with the opportunity to understand the basic reaction kinetics and dynamics. Especially, experimental and theoretical treatment of reaction rate constants will be given. Some reaction mechanisms in combustion or atmosphere will be also discussed.           This course will provide students with the opportunity to understand the basic reaction kinetics and dynamics. Especially, experimental and theoretical treatment of reaction rate constants will be given. Some reaction mechanisms in combustion or atmosphere will be also discussed.           Contents of class         1. Introduction.           2. Chemical reaction and rate theory.         3. Reaction rate theory. (1)           6. Reaction rate theory. (2)         7. Reaction rate theory. (2)           7. Reaction rate theory. (3)         8. Summary           All lectures will be given as "Imperson" style (Regular face to face class)           If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and avaluation of achievement are subject to change.           1. Introduction.         2. Chemical reaction and rate theory.           3. Reaction rate theory. (1)         6. Reaction rate theory.           4. Iterworkmines of reaction.         5. Reaction rate theory.           5. Reaction rate theory. (2)         7. Reaction rate theory.	Department Offered	Applied Chemistry	y and Life	Science		Beggining grade	MI
slohabet mark!         CHE_MASS2225           Objectives of class         This course will provide students with the opportunity to understand the basic reaction mechanisms in combustion or atmosphere will be also discussed.           This course will provide students with the opportunity to understand the basic reaction mechanisms in combustion or atmosphere will be also discussed.           Objectives of class           1. Introduction.           2. Chemical reaction rate theory.           3. Reaction rate theory. (1)           6. Reaction rate theory. (2)           7. Reaction rate theory. (3)           8. Summary           All lactures will be also of Corona virus, the course content and evaluation of achievement are subject to change.           1. Introduction.           2. Chemical reaction and rate theory.           3. Reaction rate theory. (3)           8. Summary           All lactures will be also of Corona virus, the course content and evaluation of achievement are subject to change.           1. Introduction.           2. Chemical reaction and rate theory.           3. Reaction rate theory. (2)           7. Reaction rate theory. (3)           8. Summary           All lactures will be also classion.           9. Reaction rate theory. (2)           1. Introduction.           1. Introduction.           1. Introduction.	Charge teacher name[Roman	小口 達夫 OGUC	CHI Tatsuo				
Numbering         CHE_MASS2225           Objectives of less         This course will provide students with the opportunity to understand the basic reaction kinetics and dynamics. Especially, experimental and theoretical treatment of reaction rate constants will be given. Some reaction mechanisms in combustion or atmosphere will be also discussed.           This course will provide students with the opportunity to understand the basic reaction kinetics and dynamics. Especially, experimental and theoretical treatment of reaction rate constants will be given. Some reaction mechanisms in combustion or atmosphere will be also discussed.           Contents of class         1. Introduction.           1. Introduction.         2. Chemical reaction and rate theory.           3. Reaction mact theory. (1)         6. Reaction rate theory. (2)           7. Reaction rate theory. (2)         7. Reaction rate theory. (3)           8. Summary         All lectures will be given as "In-person" style (Regular face to face class)           If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.           1. Introduction.         2. Genetion and rate theory. (3)           2. Reaction mechanism.         4. Thermodynamics of reaction.           3. Reaction mechanism.         5. Reaction rate theory. (1)           4. Introduction.         2. Chemical reaction and rate theory.           3. Reaction mechanism.         4.	alphabet mark]						
Objectives of class           This course will provide students with the opportunity to understand the basic reaction mechanisms in combustion or atmosphere will be also discussed.           This course will provide students with the opportunity to understand the basic reaction kinetics and dynamics. Especially, experimental and theoretical treatment of reaction rate constants will be given. Some reaction mechanisms in combustion or atmosphere will be also discussed.           Contents of class           1. Introduction.           2. Chemical reaction and rate theory.           3. Reaction mechanism.           4. Thermodynamics of reaction.           5. Reaction rate theory. (1)           6. Reaction rate theory. (2)           7. Reaction rate theory. (3)           8. Summary           All lectures will be given as "In-person" style (Regular face to face class)           If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for           Preventing the Spreed of Corona virus, the course content and evaluation of achievement are subject to change.           1. Introduction.           2. Reaction mechanism.           3. Reaction mechanism.           4. Ihermodynamics of reaction.           5. Reaction rate theory.           8. Reaction mechanism.           4. Ihermodynamics of reaction.           5. Reaction rate theory.           8. Reaction mechanism. <th>Numbering</th> <th>CHE_MAS52225</th> <th></th> <th></th> <th></th> <th></th> <th></th>	Numbering	CHE_MAS52225					
This course will provide students with the opportunity to understand the basic reaction kinetics and dynamics. Especially, experimental and theoretical treatment of reaction rate constants will be given. Some reaction mechanisms in combustion or atmosphere will be also discussed. This course will provide students with the opportunity to understand the basic reaction kinetics and dynamics. Especially, experimental and theoretical treatment of reaction rate constants will be given. Some reaction mechanisms in combustion or atmosphere will be also discussed. Contents of clase I. Introduction. 2. Obmical reaction and rate theory. 3. Reaction mechanism. 4. Thermodynamics of reaction. 5. Reaction rate theory. (2) 7. Reaction rate theory. (3) 8. Summary All lactures will be given as "In-person" style (Regular face to face class) If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. 1. Introduction. 3. Reaction rate theory. (2) 7. Reaction rate theory. 3. Summary All lactures will be given as "In-person" style (Regular face to face class) If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. 1. Introduction. 3. Reaction rate theory. (2) 7. Reaction rate theory. (3) 8. Summary All lactures will be given as "In-person" style (Regular face to face class) If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. Self Preparation and Review N/A	Objectives of class						
experimental and theoretical treatment of reaction rate constants will be given. Some reaction mechanisms in combustion or atmosphere will be also discussed. This course will provide students with the opportunity to understand the basic reaction kinetics and dynamics. Especially, experimental and theoretical treatment of reaction rate constants will be given. Some reaction mechanisms in combustion or atmosphere will be also discussed. Contrast of class 1. Introduction. 2. Ohenical reaction and rate theory, 3. Reaction rate theory, (1) 6. Reaction rate theory, (2) 7. Reaction rate theory, (3) 8. Summary All lectures will be given as "In-person" style (Regular face to face class) If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. 1. Introduction. 2. Chemical reaction and rate theory, 3. Reaction mechanism. 4. Thermodynamics of reaction. 5. Reaction rate theory, (1) 6. Reaction rate theory, (1) 6. Reaction rate theory, (1) 7. Reaction rate theory, (1) 7. Reaction rate theory, (1) 7. Reaction rate theory, (2) 7. Reaction rate theory, (2) 7. Reaction rate theory, (2) 7. Reaction rate theory, (2) 7. Reaction rate theory, (3) 8. Summary All lectures will be given as "In-person" style (Regular face to face class) If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. <b>Sef Preparation and Review</b> N/A N/A N/A N/A N/A N/A N/A N/A	This course will provide student	s with the opportu	inity to un	derstand	the basic reaction	kinetics and dyna	amics. Especially,
atmosphere will be also discussed. This course will provide students with the opportunity to understand the basic reaction kinetics and dynamics. Especially, experimental and theoretical treatment of reaction rate constants will be given. Some reaction mechanisms in combustion or atmosphere will be also discussed. Contents of class 1. Introduction. 2. Chemical reaction and rate theory. 3. Reaction mechanism. 4. Thermodynamics of reaction. 5. Reaction rate theory. (2) 7. Reaction rate theory. (3) 8. Summary All lectures will be given as "In-person" style (Regular face to face class) If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. 1. Introduction. 2. Chemical reaction and rate theory. 3. Reaction mechanism. 4. Thermodynamics of reaction. 5. Reaction rate theory. (1) 6. Reaction rate theory. 7.	experimental and theoretical trea	tment of reaction	rate const	ants will	be given. Some rea	ction mechanisms	in combustion or
This course will provide students with the opportunity to understand the basic reaction kinetics and dynamics. Especially, experimental and theoretical treatment of reaction rate constants will be given. Some reaction mechanisms in combustion or atmosphere will be also discussed. Contrast of class 1. Introduction. 2. Ohemical reaction and rate theory. 3. Reaction mechanism. 4. Thermodynamics of reaction. 5. Reaction rate theory. (2) 7. Reaction rate theory. (3) 8. Summary All lectures will be given as "In-person" style (Regular face to face class) If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. 1. Introduction. 3. Reaction rate theory. (1) 6. Reaction rate theory. 3. Reaction rate theory. 4. Il clurues will be given as "In-person" style (Regular face to face class) If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. 1. Introduction. 5. Reaction rate theory. 3. Reaction rate theory. 3. Reaction rate theory. 4. Reaction rate theory. 4. Reaction rate theory. 5. Reaction rate	atmosphere will be also discussed	ł.					
experimental and theoretical treatment of reaction rate constants will be given. Some reaction mechanisms in combustion of atmosphere will be also discussed. Contents of class 1. Introduction. 2. Chemical reaction and rate theory. 3. Reaction mechanism. 4. Thermodynamics of reaction. 5. Reaction rate theory. (1) 6. Reaction rate theory. (2) 7. Reaction rate theory. (2) 7. Reaction rate theory. (3) 8. Summary All lectures will be given as "In-person" style (Regular face to face class) If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. 1. Introduction. 2. Chemical reaction and rate theory. 3. Reaction mechanism. 4. Thermodynamics of reaction. 5. Reaction rate theory. (2) 7. Reaction rate theory. (2) 7. Reaction rate theory. (2) 7. Reaction rate theory. (2) 7. Reaction rate theory. (3) 8. Summary All lectures will be given as "In-person" style (Regular face to face class) If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. 5. Beaction rate theory. (2) 7. Reaction rate theory. (2) 7. Reaction rate theory. (3) 8. Summary All lectures will be given as "In-person" style (Regular face to face class) If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. 5. Self Preparation and Review N/A N/A N/A N/A N/A N/A N/A N/A	This course will provide student	s with the opportu	inity to un	derstand	the basic reaction	kinetics and dyna	amics. Especially,
Contents of class         1. Introduction.         2. Chemical reaction and rate theory.         3. Reaction mechanism.         4. Thermodynamics of reaction.         5. Reaction rate theory. (1)         6. Reaction rate theory. (2)         7. Reaction rate theory. (3)         8. Summary         All lectures will be given as "In-person" style (Regular face to face class)         If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for         Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.         1. Introduction.         2. Chemical reaction and rate theory.         3. Reaction mechanism.         4. Thermodynamics of reaction.         5. Reaction rate theory. (1)         6. Reaction rate theory. (1)         7. Reaction rate theory. (2)         7. Reaction rate theory. (1)         8. Reaction rate theory. (2)         7. Reaction rate theory. (3)         8. Summary         All lectures will be given as "In-person" style (Regular face to face class)         If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for         Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.         Self Preparation and Rev	experimental and theoretical trea atmosphere will be also discussed	illinent of reaction i	rate const	ants will	be given. Some rea	cuon mechanisms	in compustion or
1. Introduction.         2. Ohemical reaction and rate theory.         3. Reaction mechanism.         4. Thermodynamics of reaction.         5. Reaction rate theory. (1)         6. Reaction rate theory. (2)         7. Reaction rate theory. (3)         8. Summary         All lectures will be given as "In-person" style (Regular face to face class)         If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for         Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.         1. Introduction.         2. Chemical reaction and rate theory.         3. Reaction mechanism.         4. Thermodynamics of reaction.         5. Reaction rate theory. (2)         7. Reaction rate theory. (2)         7. Reaction rate theory. (3)         8. Summary         All lectures will be given as "In-person" style (Regular face to face class)         If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for         Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.         Summary         All lectures will be given as "In-person" style (Regular face to face class)         If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for	Contents of class						
<ul> <li>2. Chemical reaction and rate theory.</li> <li>3. Reaction mechanism.</li> <li>4. Thermodynamics of reaction.</li> <li>5. Reaction rate theory. (1)</li> <li>6. Reaction rate theory. (2)</li> <li>7. Reaction rate theory. (3)</li> <li>8. Summary</li> <li>All lectures will be given as "In-person" style (Regular face to face class)</li> <li>If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.</li> <li>1. Introduction.</li> <li>2. Chemical reaction and rate theory.</li> <li>3. Reaction rate theory. (1)</li> <li>6. Reaction rate theory. (1)</li> <li>7. Reaction rate theory. (1)</li> <li>6. Reaction rate theory. (1)</li> <li>6. Reaction rate theory. (2)</li> <li>7. Reaction rate theory. (3)</li> <li>8. Summary</li> <li>All lectures will be given as "In-person" style (Regular face to face class)</li> <li>If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for</li> <li>Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.</li> <li>8. Summary</li> <li>All lectures will be given as "In-person" style (Regular face to face class)</li> <li>If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for</li> <li>Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.</li> <li>Self Preparation and Review</li> <li>N/A</li> <li>N/A</li> <li>Related subjects</li> <li>N/A</li> <li>N/A</li> <li>Notes for textbook</li> <li>(Textbook is not used.)</li> <li>(Textbook is not used.)</li> <li>(Textbook is not used.)</li> <li>(Textbook is not used.)</li> </ul>	1. Introduction.						
<ul> <li>3. Reaction mechanism.</li> <li>4. Thermodynamics of reaction.</li> <li>5. Reaction rate theory. (1)</li> <li>6. Reaction rate theory. (2)</li> <li>7. Reaction rate theory. (3)</li> <li>8. Summary</li> <li>All lectures will be given as "In-person" style (Regular face to face class)</li> <li>If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for</li> <li>Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.</li> <li>1. Introduction.</li> <li>2. Chemical reaction and rate theory.</li> <li>3. Reaction rate theory. (1)</li> <li>6. Reaction rate theory. (2)</li> <li>7. Reaction rate theory. (3)</li> <li>8. Summary</li> <li>All lectures will be given as "In-person" style (Regular face to face class)</li> <li>If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for</li> <li>Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.</li> <li>Self Preparetion and Review</li> <li>N/A</li> <li>N</li></ul>	2. Chemical reaction and rate the	orv.					
<ul> <li>4. Thermodynamics of reaction.</li> <li>5. Reaction rate theory. (1)</li> <li>6. Reaction rate theory. (2)</li> <li>7. Reaction rate theory. (3)</li> <li>8. Summary</li> <li>All lectures will be given as "In-person" style (Regular face to face class)</li> <li>If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.</li> <li>1. Introduction.</li> <li>2. Chemical reaction and rate theory.</li> <li>3. Reaction rate theory. (1)</li> <li>6. Reaction rate theory. (1)</li> <li>7. Reaction rate theory. (2)</li> <li>7. Reaction rate theory. (3)</li> <li>8. Summary</li> <li>All lectures will be given as "In-person" style (Regular face to face class)</li> <li>If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for</li> <li>7. Reaction rate theory. (3)</li> <li>8. Summary</li> <li>All lectures will be given as "In-person" style (Regular face to face class)</li> <li>If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for</li> <li>Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.</li> <li>Self Preparation and Review</li> <li>N/A</li> <li>N/A</li> <li>Netas for textbook</li> <li>(Textbook is not used.)</li> <li>(Textbook is not used.)</li> <li>(Textpook is not used.)</li> <li>(Reference book)</li> </ul>	3. Reaction mechanism.						
5. Reaction rate theory. (1) 6. Reaction rate theory. (2) 7. Reaction rate theory. (3) 8. Summary All lectures will be given as "In-person" style (Regular face to face class) If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. 1. Introduction. 2. Chemical reaction and rate theory. 3. Reaction rate theory. (2) 7. Reaction rate theory. (2) 7. Reaction rate theory. (2) 7. Reaction rate theory. (2) 7. Reaction rate theory. (3) 8. Summary All lectures will be given as "In-person" style (Regular face to face class) If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. <b>Soft Proparation and Review</b> N/A N/A N/A N/A N/A N/A N/A N/A	4. Thermodynamics of reaction.						
6. Reaction rate theory. (2) 7. Reaction rate theory. (3) 8. Summary All lectures will be given as "In-person" style (Regular face to face class) If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. 1. Introduction. 2. Chemical reaction and rate theory. 3. Reaction mechanism. 4. Thermodynamics of reaction. 5. Reaction rate theory. (2) 7. Reaction rate theory. (2) 7. Reaction rate theory. (2) 7. Reaction rate theory. (3) 8. Summary All lectures will be given as "In-person" style (Regular face to face class) If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. Self Preparation and Review N/A	5. Reaction rate theory. (1)						
7. Reaction rate theory. (3)         8. Summary         All lectures will be given as "In-person" style (Regular face to face class)         If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.         1. Introduction.         2. Chemical reaction and rate theory.         3. Reaction mechanism.         4. Thermodynamics of reaction.         5. Reaction rate theory. (1)         6. Reaction rate theory. (2)         7. Reaction rate theory. (3)         8. Summary         All lectures will be given as "In-person" style (Regular face to face class)         If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.         Self Preparation and Review         N/A	6. Reaction rate theory. (2)						
<ul> <li>8. Summary</li> <li>All lectures will be given as "In-person" style (Regular face to face class)</li> <li>If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.</li> <li>1. Introduction.</li> <li>2. Chemical reaction and rate theory.</li> <li>3. Reaction mechanism.</li> <li>4. Thermodynamics of reaction.</li> <li>5. Reaction rate theory. (1)</li> <li>6. Reaction rate theory. (2)</li> <li>7. Reaction rate theory. (3)</li> <li>8. Summary</li> <li>All lectures will be given as "In-person" style (Regular face to face class)</li> <li>If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.</li> <li>Self Preparation and Review</li> <li>N/A</li> <l< td=""><th>7. Reaction rate theory. (3)</th><td></td><td></td><th></th><td></td><th></th><th></th></l<></ul>	7. Reaction rate theory. (3)						
All lectures will be given as "In-person" style (Regular face to face class) If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. 1. Introduction. 2. Chemical reaction and rate theory. 3. Reaction mechanism. 4. Thermodynamics of reaction. 5. Reaction rate theory. (1) 6. Reaction rate theory. (2) 7. Reaction rate theory. (3) 8. Summary All lectures will be given as "In-person" style (Regular face to face class) If there will be given as "In-person" style (Regular face to face class) If there will be given as "In-person" style (Regular face to face class) If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. Self Preparation and Review N/A	8. Summary						
All lectures will be given as "In-person" style (Regular face to face class) If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. 1. Introduction. 2. Chemical reaction and rate theory. 3. Reaction mechanism. 4. Thermodynamics of reaction. 5. Reaction rate theory. (1) 6. Reaction rate theory. (2) 7. Reaction rate theory. (3) 8. Summary All lectures will be given as "In-person" style (Regular face to face class) If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. Self Preparation and Review N/A							
If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. 1. Introduction. 2. Chemical reaction and rate theory. 3. Reaction mechanism. 4. Thermodynamics of reaction. 5. Reaction rate theory. (1) 6. Reaction rate theory. (2) 7. Reaction rate theory. (3) 8. Summary All lectures will be given as "In-person" style (Regular face to face class) If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. Self Preparation and Review N/A N/A N/A N/A N/A N/A N/A N/A	All lectures will be given as "In-p	erson″ style (Regul	ar face to	face clas	s)		
Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.  1. Introduction.  2. Chemical reaction and rate theory.  3. Reaction mechanism.  4. Thermodynamics of reaction.  5. Reaction rate theory. (1)  6. Reaction rate theory. (2)  7. Reaction rate theory. (3)  8. Summary  All lectures will be given as "In-person" style (Regular face to face class)  If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.  Self Preparation and Review N/A N/A  N/A  N/A  N/A  N/A  N/A  N/A	If there will be any changes regard	ding Toyohashi Univ	versity of 1	[ Fechnolog	y Activity Restricti	ons Level for	
1. Introduction. 2. Chemical reaction and rate theory. 3. Reaction mechanism. 4. Thermodynamics of reaction. 5. Reaction rate theory. (1) 6. Reaction rate theory. (2) 7. Reaction rate theory. (3) 8. Summary All lectures will be given as "In-person" style (Regular face to face class) If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. Self Preparation and Review N/A N/A N/A N/A N/A Ntes for textbook (Textbook is not used.) (Textbook is not used.) Ntotes for reference (Reference book)	Preventing the Spread of Corona	virus, the course c	ontent and	l evaluati	on of achievement a	are subject to chan	ge.
<ul> <li>2. Chemical reaction and rate theory.</li> <li>3. Reaction mechanism.</li> <li>4. Thermodynamics of reaction.</li> <li>5. Reaction rate theory. (1)</li> <li>6. Reaction rate theory. (2)</li> <li>7. Reaction rate theory. (3)</li> <li>8. Summary</li> <li>All lectures will be given as "In-person" style (Regular face to face class)</li> <li>If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.</li> <li>Self Preparation and Review</li> <li>N/A</li> <li>N/A<!--</th--><th>1. Introduction.</th><th></th><th></th><th></th><th></th><th></th><th>-</th></li></ul>	1. Introduction.						-
<ul> <li>3. Reaction mechanism.</li> <li>4. Thermodynamics of reaction.</li> <li>5. Reaction rate theory. (1)</li> <li>6. Reaction rate theory. (2)</li> <li>7. Reaction rate theory. (3)</li> <li>8. Summary</li> <li>All lectures will be given as "In-person" style (Regular face to face class)</li> <li>If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.</li> <li>Self Preparation and Review</li> <li>N/A</li> <li>N/A</li> <li>Related subjects</li> <li>N/A</li> <li>Notes for textbook</li> <li>(Textbook is not used.)</li> <li>(Textbook is not used.)</li> <li>Notes for reference</li> <li>(Reference book)</li> </ul>	2. Chemical reaction and rate the	ory.					
<ul> <li>4. Thermodynamics of reaction.</li> <li>5. Reaction rate theory. (1)</li> <li>6. Reaction rate theory. (2)</li> <li>7. Reaction rate theory. (3)</li> <li>8. Summary</li> <li>All lectures will be given as "In-person" style (Regular face to face class)</li> <li>If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.</li> <li>Self Preparation and Review N/A N/A Related subjects N/A N/A N/A N/A Notes for textbook (Textbook is not used.) (Textbook is not used.)</li> <li>Notes for reference (Reference book)</li> </ul>	3. Reaction mechanism.						
5. Reaction rate theory. (1) 6. Reaction rate theory. (2) 7. Reaction rate theory. (3) 8. Summary All lectures will be given as "In-person" style (Regular face to face class) If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. Self Preparation and Review N/A N/A N/A N/A N/A N/A Notes for textbook (Textbook is not used.) (Textbook is not used.) Notes for reference (Reference book)	4. Thermodynamics of reaction.						
6. Reaction rate theory. (2) 7. Reaction rate theory. (3) 8. Summary All lectures will be given as "In-person" style (Regular face to face class) If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. Self Preparation and Review N/A N/A N/A N/A Notes for textbook (Textbook is not used.) (Textbook is not used.) Notes for reference (Reference book)	5. Reaction rate theory. (1)						
7. Reaction rate theory. (3) 8. Summary All lectures will be given as "In-person" style (Regular face to face class) If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. Self Preparation and Review N/A N/A N/A N/A N/A Notes for textbook (Textbook is not used.) (Textbook is not used.) Notes for reference (Reference book)	6. Reaction rate theory. (2)						
<ul> <li>8. Summary</li> <li>All lectures will be given as "In-person" style (Regular face to face class)</li> <li>If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.</li> <li>Self Preparation and Review <ul> <li>N/A</li> <li>N/A</li> </ul> </li> <li>Related subjects <ul> <li>N/A</li> <li>N/A</li> </ul> </li> <li>Notes for textbook <ul> <li>(Textbook is not used.)</li> <li>(Textbook is not used.)</li> </ul> </li> <li>Notes for reference <ul> <li>(Reference book)</li> </ul> </li> </ul>	7. Reaction rate theory. (3)						
All lectures will be given as "In-person" style (Regular face to face class)  If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.  Self Preparation and Review N/A N/A Related subjects N/A N/A N/A N/A N/A N/A Notes for textbook (Textbook is not used.) (Textbook is not used.) Notes for reference (Reference book)	8. Summary						
All lectures will be given as "In-person" style (Regular face to face class) If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. Self Preparation and Review N/A N/A Related subjects N/A N/A Notes for textbook (Textbook is not used.) (Textbook is not used.) Notes for reference (Reference book)							
If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. Self Preparation and Review N/A N/A Related subjects N/A N/A Notes for textbook (Textbook is not used.) (Textbook is not used.) Notes for reference (Reference book)	All lectures will be given as "In-p	erson" style (Regul	ar face to	face clas	s)		
Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change. Self Preparation and Review N/A N/A Related subjects N/A N/A N/A Notes for textbook (Textbook is not used.) (Textbook is not used.) Notes for reference (Reference book)	If there will be any changes recer	ding Toyobaabi Usi	versity of T	Fachnala	ny Activity Postsist	one Level for	
N/A         Notes for textbook         (Textbook is not used.)         (Textbook is not used.)         Notes for reference         (Reference book)	Preventing the Spread of Corosa	virus the course of	ontent and	evaluati	on of achievement of	ons Level IOr	٥e
N/A N/A Related subjects N/A N/A N/A Notes for textbook (Textbook is not used.) (Textbook is not used.) (Textbook is not used.) Notes for reference (Reference book)	Self Preparation and Review		Silone all	Svaluati	on or domevement a		50.
N/A Related subjects N/A N/A N/A N/A Notes for textbook (Textbook is not used.) (Textbook is not used.) Notes for reference (Reference book)	N/A						
Related subjects         N/A         N/A         Notes for textbook         (Textbook is not used.)         (Textbook is not used.)         Notes for reference         (Reference book)	N/A						
N/A N/A Notes for textbook (Textbook is not used.) (Textbook is not used.) Notes for reference (Reference book)	Related subjects						
N/A Notes for textbook (Textbook is not used.) (Textbook is not used.) Notes for reference (Reference book)	N/A						
Notes for textbook         (Textbook is not used.)         (Textbook is not used.)         Notes for reference         (Reference book)	N/A						
(Textbook is not used.) (Textbook is not used.) Notes for reference (Reference book)	Notes for textbook						
(Textbook is not used.) Notes for reference (Reference book)	(Textbook is not used.)						
Notes for reference (Reference book)	(Textbook is not used.)						
(Reference book)	Notes for reference						
	(Reference book)						

wiscury all DOOK,	
Steingfeld, Francis	co, and Hase, "Chemical Kinetics and Dynamics", Prentice-hall, 1989.
(Reference book)	
Paul L. Houston, "	Chemical Kinetics and Reaction Dynamics <sup>"</sup> , McGrawHill.
(A study-aid book)	
Steingfeld, Francis	co, and Hase, "Chemical Kinetics and Dynamics", Prentice-hall, 1989.
Goals to be achiev	red
Understanding rea	ction rate theory, reaction mechanisms.
Understanding rea	ction rate theory, reaction mechanisms.
Evaluation of achie	evement
Grades for the cou	irse will be based on the reports.
Grades for the cou	irse will be based on the reports.
Examination	
レポートで実施	
By Report	
Details of examina	tion
N/A	
N/A	
Other information	
N/A	
N/A	
Reference URL	
N/A	
N/A	
Office hours	
Any time, but e-m	ail is required in advance.
Any time, but e-m <b>Relations to attair</b> Physical chemistry	ail is required in advance. <b>ment objectives of learning and education</b> <sup>1</sup> and thermodynamics.
Any time, but e-m <b>Relations to attair</b> Physical chemistry 応用化学・生命工 (C)高度な知識を	ail is required in advance. ment objectives of learning and education <sup>n</sup> and thermodynamics. 学専攻 充合的に活用できる実践力・創造力
Any time, but e-m <b>Relations to attair</b> Physical chemistry 応用化学・生命工 (C)高度な知識を 応用化学・生命工 的・創造的能力を	all is required in advance. <b>ment objectives of learning and education</b> <sup>1</sup> and thermodynamics. 学専攻 旅合的に活用できる実践力・創造力 学およびその関連分野に関する高度な知識を修得し、それらを課題解決のために統合的に活用できる実践 身につけている。
Any time, but e-m <b>Relations to attair</b> Physical chemistry 応用化学・生命工 (C)高度な知識を 応用化学・生命工 的・創造的能力を >>(C1)応用化学・ つけている。	all is required in advance. <b>iment objectives of learning and education</b> r and thermodynamics. 学専攻 統合的に活用できる実践力・創造力 学およびその関連分野に関する高度な知識を修得し、それらを課題解決のために統合的に活用できる実践 身につけている。 生命工学およびその関連分野の理論・応用知識を自発的に獲得し、それらを統合的に活用できる能力を身に
Any time, but e-m <b>Relations to attair</b> Physical chemistry 応用化学・生命工 (C)高度な知識を 応用化学・生命工 的・創造的能力を シ>(C1)応用化学・ つけている。 >>(C2)応用化学・ 発の計画を立案お	ail is required in advance. ment objectives of learning and education and thermodynamics. 学専攻 統合的に活用できる実践力・創造力 学およびその関連分野に関する高度な知識を修得し、それらを課題解決のために統合的に活用できる実践 身につけている。 生命工学およびその関連分野の理論・応用知識を自発的に獲得し、それらを統合的に活用できる能力を身に 生命工学およびその関連分野の広範囲の知識の連携により、研究開発に対する方法論を体得して、研究開 よび実践し、課題解決のための新たな技術を創造できる能力を身につけている。
Any time, but e-m <b>Relations to attair</b> Physical chemistry 応用化学・生命工 (C)高度な知識を 応用化学・生命工 的・創造的能力を >>(C1)応用化学・ つけている。 >>(C2)応用化学・ 発の計画を立案お (E)最新の技術や	ail is required in advance. ment objectives of learning and education <sup>1</sup> and thermodynamics. 学専攻 統合的に活用できる実践力・創造力 学およびその関連分野に関する高度な知識を修得し、それらを課題解決のために統合的に活用できる実践 身につけている。 生命工学およびその関連分野の理論・応用知識を自発的に獲得し、それらを統合的に活用できる能力を身に 生命工学およびその関連分野の正範囲の知識の連携により、研究開発に対する方法論を体得して、研究開 よび実践し、課題解決のための新たな技術を創造できる能力を身につけている。 社会環境の変化に対する探究心と持続的学習力
Any time, but e-m <b>Relations to attair</b> Physical chemistry 応用化学・生命工 (C)高度な知識を 応用化学・生命工 的・創造的能力を >>(C1)応用化学・ つけている。 >>(C2)応用化学・ 発の計画を立案お (E)最新の技術や 社会,環境,技術	ail is required in advance. ment objectives of learning and education and thermodynamics. 学専攻 統合的に活用できる実践力・創造力 学およびその関連分野に関する高度な知識を修得し、それらを課題解決のために統合的に活用できる実践 身につけている。 生命工学およびその関連分野の理論・応用知識を自発的に獲得し、それらを統合的に活用できる能力を身に 生命工学およびその関連分野の広範囲の知識の連携により、研究開発に対する方法論を体得して、研究開 よび実践し、課題解決のための新たな技術を創造できる能力を身につけている。 社会環境の変化に対する探究心と持続的学習力 ≨の変化に対応して、生涯にわたって自発的に計画し学習する能力を身につけている。
Any time, but e-m <b>Relations to attair</b> Physical chemistry 応用化学・生命工 (C)高度な知識を 応用化学・生命工 的・創造的能力を シ>(C1)応用化学・ つけている。 >>(C2)応用化学・ 発の計画を立案お (E)最新の技術や 社会,環境,技術等 Physical chemistry	and thermodynamics. 学専攻 統合的に活用できる実践力・創造力 学およびその関連分野に関する高度な知識を修得し、それらを課題解決のために統合的に活用できる実践 身につけている。 生命工学およびその関連分野の理論・応用知識を自発的に獲得し、それらを統合的に活用できる実践 身につけている。 生命工学およびその関連分野の正範囲の知識の連携により、研究開発に対する方法論を体得して、研究開 よび実践し、課題解決のための新たな技術を創造できる能力を身につけている。 社会環境の変化に対する探究心と持続的学習力 写の変化に対応して、生涯にわたって自発的に計画し学習する能力を身につけている。 ・ and thermodynamics.
Any time, but e-m <b>Relations to attair</b> Physical chemistry 応用化学・生命工 (C)高度な知識を 応用化学・生命工 的・創造的能力を シ>(C1)応用化学・ つけている。 >>(C2)応用化学・ 発の計画を立案お (E)最新の技術や 社会,環境,技術等 Physical chemistry Graduate Program	and thermodynamics.
Any time, but e-m <b>Relations to attair</b> Physical chemistry 応用化学・生命工 (C)高度な知識を 応用化学・生命工 的・創造的能力を シ)(C1)応用化学・ つけている。 シ)(C2)応用化学・ 発の計画を立案お (E)最新の技術や 社会,環境,技術等 Physical chemistry Graduate Program (C) Practical and o	and thermodynamics. 学専攻 統合的に活用できる実践力・創造力 学およびその関連分野に関する高度な知識を修得し、それらを課題解決のために統合的に活用できる実践 身につけている。 生命工学およびその関連分野の理論・応用知識を自発的に獲得し、それらを統合的に活用できる能力を身に 生命工学およびその関連分野の正範囲の知識の連携により、研究開発に対する方法論を体得して、研究開 よび実践し、課題解決のための新たな技術を創造できる能力を身につけている。 社会環境の変化に対する探究心と持続的学習力 序の変化に対応して、生涯にわたって自発的に計画し学習する能力を身につけている。 ' and thermodynamics.
Any time, but e-m Relations to attain Physical chemistry 応用化学・生命工: (C)高度な知識を 応用化学・生命工 的・創造的能力を シ>(C1)応用化学・ つけている。 >>(C2)応用化学・ 発の計画を立案お (E)最新の技術や 社会,環境,技術等 Physical chemistry Graduate Program (C) Practical and chave advanced kit	and to equired in advance. ment objectives of learning and education r and thermodynamics. 学専攻 統合的に活用できる実践力・創造力 学およびその関連分野に関する高度な知識を修得し, それらを課題解決のために統合的に活用できる実践 身につけている。 生命工学およびその関連分野の理論・応用知識を自発的に獲得し, それらを統合的に活用できる能力を身に 生命工学およびその関連分野の広範囲の知識の連携により,研究開発に対する方法論を体得して,研究開 よび実践し,課題解決のための新たな技術を創造できる能力を身につけている。 社会環境の変化に対する探究心と持続的学習力 导の変化に対応して, 生涯にわたって自発的に計画し学習する能力を身につけている。 * and thermodynamics. of Applied Chemistry and Life Science for Master's Degree reative skills to utilize advanced knowledge in an integrated manner iowledge about applied chemistry and life science as well as related fields; and have the practical and
Any time, but e-m <b>Relations to attair</b> Physical chemistry 応用化学・生命工 (C)高度な知識を 応用化学・生命工 的・創造的能力を シ>(C1)応用化学・ つけている。 >>(C2)応用化学・ 発の計画を立案お (E)最新の技術や 社会,環境,技術等 Physical chemistry Graduate Program (C) Practical and of Have advanced ki creative skills to u	ali s required in advance. <b>iment objectives of learning and education</b> r and thermodynamics. 学専攻 統合的に活用できる実践力・創造力 学およびその関連分野に関する高度な知識を修得し、それらを課題解決のために統合的に活用できる実践 身につけている。 生命工学およびその関連分野の理論・応用知識を自発的に獲得し、それらを統合的に活用できる能力を身に 生命工学およびその関連分野の広範囲の知識の連携により、研究開発に対する方法論を体得して、研究開 よび実践し、課題解決のための新たな技術を創造できる能力を身につけている。 社会環境の変化に対する探究心と持続的学習力 写の変化に対応して、生涯にわたって自発的に計画し学習する能力を身につけている。 • and thermodynamics. of Applied Chemistry and Life Science for Master's Degree reative skills to utilize advanced knowledge in an integrated manner iowledge about applied chemistry and life science as well as related fields; and have the practical and tilizesuch knowledge for problem solving in an integrated manner
Any time, but e-m Relations to attain Physical chemistry 応用化学・生命工: (C)高度な知識を 応用化学・生命工 的・創造的能力を シ>(C1)応用化学・ つけている。 >>(C2)応用化学・ 発の計画を立案お (E)最新の技術や 社会,環境,技術等 Physical chemistry Graduate Program (C) Practical and characterize skills to u (C1) Have the skil	and sequired in advance. ment objectives of learning and education r and thermodynamics. 学専攻 統合的に活用できる実践力・創造力 学およびその関連分野に関する高度な知識を修得し、それらを課題解決のために統合的に活用できる実践 身につけている。 生命工学およびその関連分野の理論・応用知識を自発的に獲得し、それらを統合的に活用できる能力を身に 生命工学およびその関連分野の広範囲の知識の連携により、研究開発に対する方法論を体得して、研究開 よび実践し、課題解決のための新たな技術を創造できる能力を身につけている。 社会環境の変化に対する探究心と持続的学習力 季の変化に対応して、生涯にわたって自発的に計画し学習する能力を身につけている。 ・ and thermodynamics. of Applied Chemistry and Life Science for Master's Degree reative skills to utilize advanced knowledge in an integrated manner towledge about applied chemistry and life science as well as related fields; and have the practical and tilizesuch knowledge for problem solving in an integrated manner Is to voluntarily acquire theories and applied knowledge about applied chemistry and life science as well as
Any time, but e-m Relations to attain Physical chemistry 応用化学・生命工 (C)高度な知識を 応用化学・生命工 的・創造的能力を シ>(C1)応用化学・ つけている。 >>(C2)応用化学・ 発の計画を立案お (E)最新の技術や 社会,環境,技術 Physical chemistry Graduate Program (C) Practical and char attaited fields; and	and to required in advance. ment objectives of learning and education and thermodynamics. 学専攻 統合的に活用できる実践力・創造力 学およびその関連分野に関する高度な知識を修得し, それらを課題解決のために統合的に活用できる実践 身につけている。 生命工学およびその関連分野の理論・応用知識を自発的に獲得し, それらを統合的に活用できる能力を身に 生命工学およびその関連分野の正範囲の知識の連携により,研究開発に対する方法論を体得して,研究開 よび実践し,課題解決のための新たな技術を創造できる能力を身につけている。 社会環境の変化に対する探究心と持続的学習力 等の変化に対応して, 生涯にわたって自発的に計画し学習する能力を身につけている。 ・ and thermodynamics. of Applied Chemistry and Life Science for Master's Degree reative skills to utilize advanced knowledge in an integrated manner iowledge about applied chemistry and life science as well as related fields; and have the practical and tilizesuch knowledge for problem solving in an integrated manner is to voluntarily acquire theories and applied knowledge about applied chemistry and life science as well as to utilize such knowledge in an integrated manner
Any time, but e-m Relations to attain Physical chemistry 応用化学・生命工 (C)高度な知識を 応用化学・生命工 的・創造的能力を シ>(C1)応用化学・ つけている。 >>(C2)応用化学・ 発の計画を立案お (E)最新の技術や 社会,環境,技術等 Physical chemistry Graduate Program (C) Practical and characteristics Have advanced ki creative skills to u (C1) Have the skil related fields; and (C2) Have the skil	iii srequired in advance. ment objectives of learning and education a and thermodynamics. 学専攻 協合的に活用できる実践力・創造力 学およびその関連分野に関する高度な知識を修得し、それらを課題解決のために統合的に活用できる実践 割 につけている。 生命工学およびその関連分野の理論・応用知識を自発的に獲得し、それらを統合的に活用できる能力を身に 生命工学およびその関連分野の広範囲の知識の連携により、研究開発に対する方法論を体得して、研究開 よび実践し、課題解決のための新たな技術を創造できる能力を身につけている。 社会環境の変化に対する探究心と持続的学習力 年の変化に対応して、生涯にわたって自発的に計画し学習する能力を身につけている。 • and thermodynamics. of Applied Chemistry and Life Science for Master's Degree reative skills to utilize advanced knowledge in an integrated manner towledge about applied chemistry and life science as well as related fields; and have the practical and tilizesuch knowledge for problem solving in an integrated manner is to voluntarily acquire theories and applied knowledge about applied chemistry and life science as well as to utilize such knowledge in an integrated manner ills to learn, by experience, methodologies for research and development through integrating extensive
Any time, but e-m Relations to attain Physical chemistry 応用化学・生命工 (C)高度な知識を 応用化学・生命工 的・創造的能力を シ>(C1)応用化学・ つけている。 >>(C2)応用化学・ 発の計画を立案お (E)最新の技術や 社会,環境,技術等 Physical chemistry Graduate Program (C) Practical and c Have advanced k creative skills to u (C1) Have the skil related fields; and (C2) Have the sk knowledge about a	ai is required in advance. ment objectives of learning and education a and thermodynamics. 学専攻 統合的に活用できる実践力・創造力 学およびその関連分野に関する高度な知識を修得し, それらを課題解決のために統合的に活用できる実践 別につけている。 生命工学およびその関連分野の理論・応用知識を自発的に獲得し, それらを統合的に活用できる能力を身に 生命工学およびその関連分野の広範囲の知識の連携により, 研究開発に対する方法論を体得して, 研究開 よび実践し, 課題解決のための新たな技術を創造できる能力を身につけている。 社会環境の変化に対する探究心と持続的学習力 \$ の変化に対応して, 生涯にわたって自発的に計画し学習する能力を身につけている。 • and thermodynamics. of Applied Chemistry and Life Science for Master's Degree reative skills to utilize advanced knowledge in an integrated manner towledge about applied chemistry and life science as well as related fields; and have the practical and tilizesuch knowledge for problem solving in an integrated manner Is to voluntarily acquire theories and applied knowledge about applied chemistry and life science as well as related fields; and have the practical and tilize such knowledge in an integrated manner Is to voluntarily acquire theories and applied knowledge about applied chemistry and life science as well as to utilize such knowledge in an integrated manner is to voluntarily acquire theories and applied knowledge about applied chemistry and life science as well as to utilize such knowledge in an integrated manner ils to learn, by experience, methodologies for research and development through integrating extensive pplied chemistry and life science as well as related fields; to make plans for research and developmentand
Any time, but e-m Relations to attain Physical chemistry 応用化学・生命工 (C)高度な知識を 応用化学・生命工 的・創造的能力を シ>(C1)応用化学・ つけている。 >>(C2)応用化学・ 発の計画を立案お (E)最新の技術や 社会,環境,技術等 Physical chemistry Graduate Program (C) Practical and c Have advanced k creative skills to u (C1) Have the skill related fields; and (C2) Have the sk knowledge about a put them into prace	ai is required in advance. ment objectives of learning and education a and thermodynamics. 学専攻 統合的に活用できる実践力・創造力 学およびその関連分野に関する高度な知識を修得し、それらを課題解決のために統合的に活用できる実践 別につけている。 生命工学およびその関連分野の理論・応用知識を自発的に獲得し、それらを統合的に活用できる能力を身に 生命工学およびその関連分野の広範囲の知識の連携により、研究開発に対する方法論を体得して、研究開 よび実践し、課題解決のための新たな技術を創造できる能力を身につけている。 社会環境の変化に対する探究心と持続的学習力 季の変化に対応して、生涯にわたって自発的に計画し学習する能力を身につけている。 ・ and thermodynamics. of Applied Chemistry and Life Science for Master's Degree reative skills to utilize advanced knowledge in an integrated manner towledge about applied chemistry and life science as well as related fields; and have the practical and tilizesuch knowledge for problem solving in an integrated manner ls to voluntarily acquire theories and applied knowledge about applied chemistry and life science as well as related fields; and have the practical and tilizesuch knowledge for problem solving in an integrated manner ls to voluntarily acquire theories and applied knowledge about applied chemistry and life science as well as to utilize scillar theories and applied knowledge about applied chemistry and life science as well as to utilize scillar theories and applied knowledge about applied chemistry and life science as well as to utilize scillar theories and applied knowledge about applied chemistry and life science as well as to utilize scillar theories and applied knowledge about applied chemistry and life science as well as to utilize scillar theories and applied knowledge about applied chemistry and life science as well as related fields; to make plans for research and development and tice; and to create new technologies to solve problems
Any time, but e-m <b>Relations to attair</b> Physical chemistry 応用化学・生命工 (C)高度な知識を 応用化学・生命工 的・創造的能力を シ>(C1)応用化学・ つけている。 >>(C2)応用化学・ 発の計画を立案お (E)最新の技術や 社会,環境,技術等 Physical chemistry Graduate Program (C) Practical and c Have advanced kk creative skills to u (C1) Have the skill related fields; and (C2) Have the sk knowledge about a put them into prace (E) Inquisitive outl	al is required in advance. ment objectives of learning and education <sup>4</sup> and thermodynamics. 学専攻 協合的に活用できる実践カ・創造力 学およびその関連分野に関する高度な知識を修得し, それらを課題解決のために統合的に活用できる実践 身につけている。 生命工学およびその関連分野の理論・応用知識を自発的に獲得し, それらを統合的に活用できる能力を身に 生命工学およびその関連分野の広範囲の知識の連携により, 研究開発に対する方法論を体得して, 研究開 よび実践し, 課題解決のための新たな技術を創造できる能力を身につけている。 社会環境の変化に対する探究心と持続的学習力 季の変化に対応して、生涯にわたって自発的に計画し学習する能力を身につけている。 <sup>4</sup> and thermodynamics. of Applied Chemistry and Life Science for Master's Degree reative skills to utilize advanced knowledge in an integrated manner rowledge about applied chemistry and life science as well as related fields; and have the practical and tilizesuch knowledge for problem solving in an integrated manner Is to voluntarily acquire theories and applied knowledge about applied chemistry and life science as well as related fields; and have the practical and tilizesuch knowledge in an integrated manner Is to voluntarily acquire theories and applied knowledge about applied chemistry and life science as well as to utilize such knowledge in an integrated manner Ils to learn, by experience, methodologies for research and development through integrating extensive pplied chemistry and life science is volut are plans for research and development and the developmentand tice; and to create new technologies to solve problems ook and skills for continuous learning in response to state-of-the-art technology and changes in the social
Any time, but e-m <b>Relations to attair</b> Physical chemistry 応用化学・生命工 (C)高度な知識を 応用化学・生命工 的・創造的能力を シ>(C1)応用化学・ つけている。 >>(C2)応用化学・ 発の計画を立案が (E)最新の技術や 社会,環境,技術等 Physical chemistry Graduate Program (C) Practical and c Have advanced ka creative skills to u (C1) Have the skill related fields; and (C2) Have the skill related fields; and (C3) Have th	al is required in advance. ment objectives of learning and education and thermodynamics. 学専攻 読合的に活用できる実践力・創造力 学およびその関連分野に関する高度な知識を修得し, それらを課題解決のために統合的に活用できる実践 身につけている。 生命工学およびその関連分野の理論・応用知識を自発的に獲得し, それらを統合的に活用できる能力を身に 生命工学およびその関連分野の広範囲の知識の連携により, 研究開発に対する方法論を体得して, 研究開 よび実践し, 課題解決のための新たな技術を創造できる能力を身につけている。 社会環境の変化に対する探究心と持続的学習力 等の変化に対応して, 生涯にわたって自発的に計画し学習する能力を身につけている。 ・ and thermodynamics. of Applied Chemistry and Life Science for Master's Degree reative skills to utilize advanced knowledge in an integrated manner towledge about applied chemistry and life science as well as related fields; and have the practical and tilizesuch knowledge for problem solving in an integrated manner Is to voluntarily acquire theories and applied knowledge about applied chemistry and life science as well as related fields; and have the practical and tilizesuch knowledge in an integrated manner Is to voluntarily acquire theories and applied knowledge about applied chemistry and life science as well as related fields; to make plans for research and development through integrating extensive pplied chemistry and life science as well as related fields; to make plans for research and development and the science as well as to utilize advanced in an integrated manner Is to learn, by experience, methodologies for research and development through integrating extensive pplied chemistry and life science as well as related fields; to make plans for research and developmentand tice; and to create new technologies to solve problems sok and skills for continuous learning in response to state-of-the-art technology and changes in the social

Reaction, Rate Theory, Transition State Theory, Lindemann Mechanism. Reaction, Rate Theory, Transition State Theory, Lindemann Mechanism.

## (M44630280)X-ray Spectroscopy for Catalytic Engineering[X-ray Spectroscopy for Catalytic Engineering]

Subject name[English]	X-ray Spectros	scopy for C	atalyt	ic Engineering[X-	ray Spectroscopy	/ for Catalytic
Schedule number	M44630280	Subject are	9	Advanced	Required or	Flective
	1111000200		a	Applied	elective	LICOLIVO
				Chemistry and		
				Life Science		
Time of starting a course	Spring2 term	Day of	the	Tue.3~3	Credit(s)	1
Faculty	Graduate Program	m for Master's	Degre	e	Subject grade	1~
Department Offered	Applied Chemistr	v and Life Scie	ence		Beggining	M1
		,			grade	
Charge teacher name[Roman	水嶋 生智 MIZU	SHIMA Takano	ori			
alphabet mark]						
Numbering	CHE_MAS52225					
Objectives of class						
To gain knowledge of X-ray spec	troscopic techniqu	ies including X	-ray c	liffraction, X-ray ab	sorption fine struc	ture (XAFS), and
fluorescent X-ray spectroscopy a	is analytical tools f	or solid cataly	sts.			
Contents of class						
On-demand 1st week Fundam	entals of X-ray an	d its spectroso	ору			
On-demand 2nd week Principl	le, measurement, a	nd application	of X-r	ay diffraction		
Face to face 3rd week Experime	ental practice of X-	ray diffraction				
On-demand 5th week Principle	e, measurement, ar	talvet observet	AFS	20		
On-demand 6th week Advance	ed XAFS technique	caryst criaracte	nicati	ons		
On-demand 7th week Principl	e measurement ar	nd application (	of fluo	rescent X-ray spec	troscony	
Face to face 8th week Review a	nd examination		51 1100	respect v ruy spec	d osoopy	
Self Preparation and Review To enhance a learning effect, stud Related subjects It is advisable to have basic know Notes for textbook No textbook is required. A printed (Reference) Y.Iwasawa et al., "X-ray absorptic Notes for reference	dents are encourag ledge of physical a l synopsis of the cl on fine structure fo	ed to prepare nd inorganic cł lass will be give r catalysts and	for an nemist en. I surfa	d review the lectur ry. nces", World Scient	e for around 90 mir	nutes each.
Goals to be achieved						
(1) Understanding of basics of X-	ray spectroscopv					
(2) Understanding of X-ray diffrac	ction, XAFS, and flu	uorescent X−ra	y spe	ctroscopy as analyt	ical tools for solid	catalysts.
Evaluation of achievement						
Reports(50%), Examination(50%)						
Examination 定期試験を実施(対面)						
Examination(Face to Face)						
Details of examination						
Other information						
Takanori Mizushima, room : B-302	2, e−mail: mizushim	a@chem.tut.ac	jp			
Reference URL						
Office hours						

Anytime

Relations to attainment objectives of learning and education

Key words

 $X\mbox{-}ray\mbox{ spectroscopy, X\mbox{-}ray\mbox{ diffraction, XAFS, Fluorescent\mbox{ X-}ray\mbox{ spectroscopy, Solid\mbox{ catalysts}}$ 

### (M44630290)Advanced Biomaterials Engineering[Advanced Biomaterials Engineering]

Subject name[English]	Advanced Biomaterials Engineering[Advanced Biomaterials Engineering]						
Schedule number	M44630290	Subject area	Advanced Applied Chemistry and Life Science	Required or elective	Elective		
Time of starting a course	Spring2 term	Day of the week,period	Thu.3~3	Credit(s)	1		
Faculty	Graduate Program for Master's D	egree		Subject grade	1~		
Department Offered	Applied Chemistry and Life Scien	Beggining grade	M1				
Charge teacher name[Roman alphabet mark]	辻 秀人, 手老 龍吾 TSUJI Hide	to, TERO Ryugo		<u>.</u>			
Numbering	CHE MAS52225						

### **Objectives of class**

Biomaterials have been developed and studied in terms of various applications including biomedical, pharmaceutical and environmental applications. This course covers the fundamentals and applications of biomaterials and related experimental techniques.

#### **Contents of class**

If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.

This course deals with all aspects of biobased and biodegradable polymers for biomedical, pharmaceutical, and environmental applications, and of interactions in solutions between biomolecules. The detailed course schedule is shown below. The detailed course schedule is shown below.

Biobased and biodegradable polymers (Hideto Tsuji):

(1) introduction, synthesis, and structures (face to face), (2) molding, crystallization, and physical properties (remote simultaneous interactive), (3) hydrolytic degradation and biodegradation (face to face).

Biodevice and biosensing (Ryugo Tero):

(4) introduction of surface energy and interface energy, (5) molecular assembly in aqueous solution, (6) application to biomaterials and biodevices, and (7) sensing and imaging techniques relating to biomolecules and biomaterials.

If there will be any changes regarding Toyohashi University of Technology Activity Restrictions Level for Preventing the Spread of Corona virus, the course content and evaluation of achievement are subject to change.

If there is any changes about a class schedule, I will inform you on Google Classroom or KYOMU JOHO SYSTEM.

## Self Preparation and Review

If possible, read the reference book chapters which are shown below and you can find them in the university library (Hideto Tsuii).

Read the appropriate chapter(s) of the reference book (#3) shown below. You can access it in the university network. (Ryugo Tero)

**Related subjects** 

## N/A

### Notes for textbook

Printed materials will be distributed (Hideto Tsuji).

Printed materials will be distributed as necessary (Ryugo Tero).

Reference1	Book title	Degradation of Po	ly (Lactide)-Base	ed Biodegradable	ISBN	1604565020
		Materials				
	Author	Hideto Tsuji <b>Publisher</b> Nova Science			Publish year	2008
				Pub Inc		
Reference2	Book title	Chapter 21 in	"Poly(lactic a	ISBN	0470293667	
		Structures, Pr	operties, Pro	ocessing, and		
		Applications"				
	Author	Hideto Tsuji	Publisher	Wiley	Publish year	2010
Reference3	Book title	Nanoscience: Nano	biotechnology an	d Nanobiology	ISBN	978-3-540-

	· · · · · ·					88633-4
	Author	Patrick Boisseau	Publisher	Springer	Publish year	2009
		& Marcel				
	'	Lahmani				
Notes for reference	<b>-</b> \					
Reference book 3 (Ryug	so lero):	₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽ ₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽	0.6			
http://link.springer.com/	/book/10.1007/	62F9/8-3-042-2003	J−0			
To understand the fund	amontals and a	enlightions of highes	ad and biodegrad	chla nalumere (Hide	ata Tauii)	
To understand the fun	dementals and a	applications of inte	ractions in aque	able polymens (made	ing to biodevice	e and biosensing
(Rvugo Tero).	damontale a					
Evaluation of achieveme	ent					
Presentation (100%) reg	arding the biob	ased and biodegradal	ble polymers (Hid	eto Tsuji)		
Reporting assignment (1	100%) which will	be given in each cla	iss (Ryugo Tero)			
[Evaluation basis] Stude	ents who atten	d all classes will be e	valuated as follov	vs:		
S: Achieved all goals an	d obtained tota	I points of presentat	ion or reports, 90	or higher (out of 1	00 points).	
A: Achieved 80 % of goa	Is and obtained	l total points of pres	entation or report	s, 80 or higher (ou	t of 100 points).	
B: Achieved 70 % of goa	Is and obtained	total points of pres	entation or report	s, 70 or higher (ou	t of 100 points).	
C: Achieved 60 % of goa	ils and obtained	total points of pres	entation or report	s, 60 or higher (ou	t of 100 points).	
Examination						
その他						
Other						
Details of examination	::)					
Presentation (nuclo is	iuji) Dinas Tero)					
Ather information	tyugo rero,					
Poom (G-606) e-mail (f	touii@enstut ac	in) phone: 6922 (Hi	data Tauji)			
Room (G-402) e-mail (f	tero@tut in) nh	.jp), priorie. 0922 (m.				
Reference URL	teroetatijp/, pri	UIC. UUT (Tyugo To	10/			
N/A						
Office hours						
Immediately after the cl	lass (Hideto Ts	uji)				
After the class, or as ne	eded in my off	ice (Ryugo Tero)				
Relations to attainment	objectives of l	earning and educatic	n			
(C)高度な知識を統合的	りに活用できる	実践力·創造力				
応用化学・生命工学お。	よびその関連分	♪野に関する高度なタ	知識を修得し、そ	れらを課題解決の	ために統合的に	活用できる実践
的・創造的能力を身につ	っけている。					
>>(C1) 応用化学·生命	工学およびその	)関連分野の理論・応	用知識を自発的	に獲得し, それらを	統合的に活用で	できる能力を身に
つけている。						
>>(C2) 心用化子・生命	エ字およいそり	)関連分野の仏範囲		より、研究開発にメ	すする万法調を1	本得して、研究開
発の計画を立条およい	実践し, 誅趄阱	決のための新たな技	術を創造でさる服	自力を身につけ しい	る。	
	··			- 1		/
>>(D1) 論又, 山頭及い	情報メティアを	通じて、目分の福息	や考えなとを国い	)内外において効果	そ的に表現・発信	雪し、コミュニケー
ションする能力を身につ	けている。					
(ᅳ) 몸 ᅶ ᇂ ᅶ ᄹ ᄔ ᄮ ᄉᆞ		・ トマ Iの cha > し ++ 4= 4				
(E) 最新の技術や在会	環境の変化にメ	対する探究心と持続は	內字習力 ™±Ы==□ ■□ ●羽		11	
社会, 塚児, 技術寺の3	21ビニ対応して,	, 生涯にわたつし日チ	も的に計画し子音	する能刀を身にフ	けている。	
	_1					
	ター・マーマーナス					
(C) 局度な知識を統合的 亡田ル労 たみて尚れ	内に沽用でさる	実践刀・剧道刀	►□=盐+ kF /8   乙	上こナ無昭初にの	- はにはる的に	- ニーマート マーマー
心用化子・土叩工子の。	よいての実建元 マチナロス	♪野に関9つ向没なフ	山諏を119日、て、	れらを誄越胜次の	7このここれ 百円いい	- 活用 じさる夫岐
N - 創造的能力です。	コリしいる。 エヴお上びその	♪関浦公野の理論・応	「田知識を白発的	に猫得! それらな	- 毎合的に活用す	ホキス能力を身に
つけている。		们别走刀站站站。"山	ᄽᆑᄴᇓᇰᆸᇨᆈ	1~1支1寸し、しれいうさ	「形「ロ H JI 〜 /ロ / II 、	CORNENC
>>(C2) 広用化学·牛命	〒学およびそ(	の関連分野の広範囲	の知識の連携に	より 研究開発に文	する方法論を	本得して、研究開
発の計画を立案および	実践し課題解	決のための新たな技	術を創造できる能	ドカを身につけてい		
(E)最新の技術や社会	環境の変化に対	はする探究心と持続的	的学習力		••	
社会,環境,技術等の変	変化に対応して	, 生涯にわたって自引	発的に計画し学習	する能力を身につ	けている。	

Graduate Program of Applied Chemistry and Life Science for Master's Degree

(C) Practical and creative skills to utilize advanced knowledge in an integrated manner

Have advanced knowledge about applied chemistry and life science as well as related fields; and have the practical and creative skills to utilizesuch knowledge for problem solving in an integrated manner

(C1) Have the skills to voluntarily acquire theories and applied knowledge about applied chemistry and life science as well as related fields; and to utilize such knowledge in an integrated manner

(C2) Have the skills to learn, by experience, methodologies for research and development through integrating extensive knowledge about applied chemistry and life science as well as related fields; to make plans for research and developmentand put them into practice; and to create new technologies to solve problems

(E) Inquisitive outlook and skills for continuous learning in response to state-of-the-art technology and changes in the social environment

Have the skills to voluntarily make plans and learn throughout one's life in response to changesin society, environment and technology

## Key words

実務経験

# (M44630440)Advanced Molecular Design Chemistry 2[Advanced Molecular Design Chemistry 2]

Subject name[English]	Advanced Molecu	lar Design Ch	emistr	v 2[Advanced Mole	cular Design Chem	istry 2]	
	M44630440	Subject area	a	Advanced	Required or	Flective	
	1111000110	Cubject al e	a	Applied	elective	LICOLIVE	
				Chamiatry and	01001140		
				Life Science			
Time of starting a course	Spring term	Day of	the	Intensive	Credit(e)	2	
Time of starting a course	Spring term	week period	uie	Incensive	Orbuil(s)	2	
Faculty	Graduate Program	n for Master's	Degre	<u>م</u> د	Subject grade	1~	
Department Offered	Applied Chemistry	v and Life Scie	ence		Beggining	M1	
	, applied enternied	y and End ook	51100		grade		
Charge teacher name[Roman	S4系教務委員, 相	公本 明彦 齊	下 身	急, 吉田 絵里, 原	口 直樹 有吉 訪	之 之一郎 4kei kvomu	
alphabet mark]	Iin-S. MATSUM	OTO Akihiko.	SAI	TO Yoshihiro. Y	OSHIDA Eri. HAI	RAGUCHI Naoki.	
	ARIYOSHI Seiichi	iro	, .,				
Numbering	CHE MAS52225						
Objectives of class	-						
This course will provide the stude	onto with the oppor	tunity to study	v on t	he calented subject	in the realm of ad	vanced molecular	
design chemistry	ents with the oppor		yon c				
The electric will be given by his /	hau aunamiaan Tha	الأنبية معموما والمراجع		without the second these	haale and nanava	اميد مايد مراجع	
The classes will be given by his/	ner supervisor. The		be re	equired to read text	LDOOKS and papers	but the type and	
contents of this course depend of	n nis/ ner superviso	r.					
Weeks 1 through 15: Topics on ac	lvanced molecular o	design chemist	try (fa	ce to face)			
The course content and evaluation	on of achievement a	are subject to	chang	ge due to change in	TUT Activity Rest	rictions Level for	
Preventing the Spread of COVID-	-19.						
Self Preparation and Review							
Preparation (90 minutes) and revi	ew (90 minutes) are	e generally req	uired	for each class of 90	0 minutes.		
Related subjects							
Advanced Molecular Design Chem	nistry 1						
Notes for textbook							
Supervisor will recommend textbo	ooks and papers to	students.					
Notes for reference							
N/A							
Goals to be achieved							
To acquire advanced knowledge o	on advanced molecu	ılar design che	mistr	y.			
To be able to report and discuss	the contents of tex	tbooks and pa	pers l	ne∕she has read.			
Evaluation of achievement							
The evaluation is based on the so	ores of reports, pre	esentations, ar	nd exa	mination.			
His/her supervisor evaluates the	scores.	, ,					
S: 90 or higher (out of 100 points)	).						
A: 80 or higher (out of 100 points)	).						
B: 70 or higher (out of 100 points)	).						
C: 60 or higher (out of 100 points	)						
Examination							
試験期間中には何も行わない							
None during exam period							
Details of examination							
N/A							
Other information							
N/A							
Reference URL							
http://chem.tut.ac.jp/en/							
Office hours							
Students are encouraged visiting	by appointment.						
Relations to attainment objective	s of learning and e	ducation					
	<b>.</b>						

(C) Practical and creative skills to utilize advanced knowledge in an integrated manner

Have advanced knowledge about applied chemistry and life science as well as related fields; and have the practical and creative skills to utilize such knowledge for problem solving in an integrated manner

(C1) Have the skills to voluntarily acquire theories and applied knowledge about applied chemistry and life science as well as related fields; and to utilize such knowledge in an integrated manner

(C2) Have the skills to learn, by experience, methodologies for research and development through integrating extensive knowledge about applied chemistry and life science as well as related fields; to make plans for research and development and put them into practice; and to create new technologies to solve problems

(E) Inquisitive outlook and skills for continuous learning in response to state-of-the-art technology and changes in the social environment

Have the skills to voluntarily make plans and learn throughout one's life in response to changes in society, environment and technology

## Key words

Applied chemistry, Life science, Materials science and engineering

# (M44630460)Advanced Molecular Functional Chemistry 2[Advanced Molecular Functional Chemistry 2]

Subject name[English]	Advanced Molecu	Ilar Functiona	l Chen	nistry 2[Advanced N	Iolecular Function	al Chemistry 2]
Schedule number	M44630460	Subject ar	38	Advanced	Required or	Flective
		Cabjeet al	Ju	Applied	elective	LICOLIVO
				Chemistry and	0000000	
				Life Science		
Time of starting a source	Spring torm	Day of	the	Intensive	Credit(a)	2
Time of starting a course	Spring Lerm	Day of	une L	Intensive	Great(s)	2
E	Quadrata Duaman	week,perio			Outlinet and	1
Faculty	Graduate Program	n for Masters	s Degre	e	Subject grade	~~ 
Department Offered	Applied Chemistry	y and Life Sc	ience		Beggining	MI
	04万批改千号 >	L = L - L - L - L	5 4- 50		grade 本上明 松山	4
Charge teacher name Roman	54糸教務安員, 1	こ 穷人,水嶋	ы 生智 	,小口 建大 栄品	一孝、大門俗之	4kei kyomu lin-S,
alphabet mark]	ISUJI Hideto, M	IIZUSHIMA	lakano	ri, OGUCHI Tatsud	o, SHIBATOMI Ka	azutaka, DAIMON
	Hiroyuki					
Numbering	CHE_MAS52225					
Objectives of class						
This course will provide the stude	ents with the oppor	tunity to stud	ly on t	he selected subject	in the realm of ac	lvanced molecular
functional chemistry.				•		
Contents of class						
The classes will be given by his/	her supervisor The	e studente wi	ll he re	auired to read text	hooks and naners	but the type and
contents of this course depend of	n bic/ber cupenvice					but the type and
contents of this course depend o	n nis/ ner superviso	r.				
Weeks 1 through 15: Topics on ac	dvanced molecular f	functional che	emistry	(face to face)		
The course content and evaluation	on of achievement a	are subject to	o chang	ge due to change in	TUT Activity Res	trictions Level for
Preventing the Spread of COVID-	-19.	•				
Self Preparation and Review						
Preparation (90 minutes) and revi	iew (90 minutes) are	a generally re	auirod	for each class of 90	) minutes	
Preparation (30 minutes) and rev	iew (30 minutes) are	e generally re	quireu		o minutes.	
Advanced Molecular Functional C	nemistry I					
Notes for textbook						
Supervisor will recommend textbo	poks and papers to	students.				
Notes for reference						
N/A						
Goals to be achieved						
To acquire advanced knowledge o	on advanced molecu	lar functiona	l chem	istry.		
To be able to report and discuss	the contents of tex	tbooks and p	apers	ne∕she has read.		
Evaluation of achievement						
The evaluation is based on the or	oroo of roporto pro		nd ave	mination		
His /bar supervisor evaluates the		esentations, a		inination.		
Ris/ rier supervisor evaluates the	scores.					
A 00 au history ( 1 100 points	), )					
A: ou or nigner (out of 100 points	), \					
D: 70 or nigner (out of 100 points	), \					
C: OU or higher (out of TUU points	57					
試験期間中には何も行わない						
None during exam period						
Details of examination						
N/A						
Other information						
N/A						
Reference URL						
http://chem.tut.ac.jp/en/						
Office hours						
Students are encouraged visiting	by appointment					
Relations to attainment objective	s of learning and a	ducation				

(C) Practical and creative skills to utilize advanced knowledge in an integrated manner

Have advanced knowledge about applied chemistry and life science as well as related fields; and have the practical and creative skills to utilize such knowledge for problem solving in an integrated manner

(C1) Have the skills to voluntarily acquire theories and applied knowledge about applied chemistry and life science as well as related fields; and to utilize such knowledge in an integrated manner

(C2) Have the skills to learn, by experience, methodologies for research and development through integrating extensive knowledge about applied chemistry and life science as well as related fields; to make plans for research and development and put them into practice; and to create new technologies to solve problems

(E) Inquisitive outlook and skills for continuous learning in response to state-of-the-art technology and changes in the social environment

Have the skills to voluntarily make plans and learn throughout one's life in response to changes in society, environment and technology

## Key words

Applied chemistry, Life science, Materials science and engineering

# (M44630480)Advanced Molecular Biological Chemistry 2[Advanced Molecular Biological Chemistry 2]

Subject name[English]	Advanced Molecu	ılar Biological (	Chemi	stry 2[Advanced Mo	olecular Biological (	Chemistry 2]
Schedule number	M44630480	Subject are	a	Advanced	Required or	Elective
		-		Applied	elective	
				Chemistry and		
				Life Science		
Time of starting a course	Spring term	Day of	the	Intensive	Credit(s)	2
		week,period	<u> </u>		<u>.</u>	4
	Graduate Progran	n for Master's	Degre	e	Subject grade	~  ↓
Department Offered	Applied Chemistry	y and Life Scie	ence		Beggining	MI
Ohanna taashan nama[Daman	€4亥券效禾吕 \$	※ 优	f⊓B	一日子 昭禄 书本	grace · 些五 西田 긴 d	市海 佐 吉田
charge teacher name_roman	34 宋 秋 伤 女 貝,/	伯 夜彦,同岳 住 由鉄 這	л тин Лка:	则,山中 照通,于老 Javamu Jin-S EKI		с, ідія іп, ош
alphabet mark]			46	KUDITA Hirofumi		SHIMA Razunon,
			yugo,	KORITA HIPOTUINI,	HIROSE TU, TC	SHIDA Sachiko,
Numbering	CHE MAS52225		.503111			
This course will provide the stude	ents with the oppor	tunity to study	y on t	ne selected subject	in the realm of ad	vanced molecular
Diological chemistry.						
	<b>. .</b>		le e un			had the time and
The classes will be given by his/	ner supervisor. Ine	e students will	be re	equired to read text	books and papers	but the type and
contents of this course depend of	n nis/ ner superviso	or.				
Weeks 1 through 15: Topics on ad	lvanced molecular b	piological chen	nistry	(face to face)		
The course content and evaluation	n of achievement a	are subject to	chang	ge due to change in	TUT Activity Rest	rictions Level for
Preventing the Spread of COVID-	-19.	-	-			
Self Preparation and Review						
Preparation (90 minutes) and revi	ew (90 minutes) are	e generally rec	uired	for each class of 90	) minutes.	
Related subjects			-			
Advanced Molecular Biological Ch	emistry 1					
Notes for textbook						
Supervisor will recommend textbo	oks and papers to	students.				
Notes for reference						
N/A						
Goals to be achieved						
To acquire advanced knowledge o	n advanced molecu	ular biological o	chemis	stry.		
To be able to report and discuss	the contents of tex	tbooks and pa	pers ł	ne/she has read.		
Evaluation of achievement						
The evaluation is based on the sc	ores of reports, pre	esentations, ar	nd exa	mination.		
His/her supervisor evaluates the	scores.					
S: 90 or higher (out of 100 points)	),					
A: 80 or higher (out of 100 points)	),					
B: 70 or higher (out of 100 points)	),					
C: 60 or higher (out of 100 points)	)					
Examination						
試験期間中には何も行わない						
None during exam period						
Details of examination						
N/A						
Other information						
N/A						
Reference URL						
http://chem.tut.ac.jp/en/						
Office hours						
Students are encouraged visiting	by appointment.					
Relations to attainment objective	s of learning and e	ducation				

(C) Practical and creative skills to utilize advanced knowledge in an integrated manner

Have advanced knowledge about applied chemistry and life science as well as related fields; and have the practical and creative skills to utilize such knowledge for problem solving in an integrated manner

(C1) Have the skills to voluntarily acquire theories and applied knowledge about applied chemistry and life science as well as related fields; and to utilize such knowledge in an integrated manner

(C2) Have the skills to learn, by experience, methodologies for research and development through integrating extensive knowledge about applied chemistry and life science as well as related fields; to make plans for research and development and put them into practice; and to create new technologies to solve problems

(E) Inquisitive outlook and skills for continuous learning in response to state-of-the-art technology and changes in the social environment

Have the skills to voluntarily make plans and learn throughout one's life in response to changes in society, environment and technology

### Key words

Applied chemistry, Life science, Materials science and engineering

## (M45610011)Seminar on Architecture and Civil Engineering I[Seminar on Architecture and Civil Engineering I]

				· · · · · · · · · · · · · · · · · · ·	
Subject name[English]	Seminar on A	rchitecture and Giv	I Engineering ISe	eminar on Archite	ecture and Civil
	Engineering I	-	1	1	1
Schedule number	M45610011	Subject area	Advanced	Required or	Required
			Architecture	elective	
			and Civil		
			Engineering		
Time of starting a second	Veen	Davi of the	Lingineering	0	0
l lime of starting a course	rear	Day of the	Intensive	Great(s)	3
		week,period			
Faculty	Graduate Progra	am for Master's Degre	ee	Subject grade	1~1
Department Offered	Architecture an	d Civil Engineering		Beggining	M1
				grade	
Charge teacher name[Roman	S5系教務委員	5kei kvomu Iin-S			
alphabet mark]		,			
Numbering		•			
Numbering	ARC_WASUTUTS				
Objectives of class					
All the students are required to	attend all the ser	minars, which is arrar	nged by the laborate	ory supervisor for	the special study
subjects related to the current re	esearch activity o	f the laboratory. The	scheduled program	of the seminars is	announced by the
supervisor at the guidance of the	seminar		1 0		
Contento of close	Serimar.				
Contents of class					
Self Preparation and Review					
Related subjects					
Natao far taxthook					
Notes for textbook					
Notes for reference					
Goals to be achieved					
Evaluation of appiavement					
Report					
Examination					
その他					
Other					
Details of examination					
Docano or oxaminadori					
Other information					
Deferre e UDI					
Office hours					
Relations to attainment objective	s of learning and	education			
1					
Key words					

## (M45610031)Thesis Research on Architecture and Civil Engineering[Thesis Research on Architecture and Civil Engineering]

Subject name[English]	Thesis Research	on Architecture and	Civil Engineering	hesis Research on	Architecture and		
	Civil Engineering]						
Schedule number	M45610031	Subject area	Advanced Architecture and Civil Engineering	Required or elective	Required		
Time of starting a course	2Years	Day of the week.period	Intensive	Credit(s)	6		
Faculty	Graduate Progra	m for Master's Degre	e	Subject grade	1~1		
Department Offered	Architecture and	d Civil Engineering		Beggining grade	M1, M2		
Charge teacher name[Roman alphabet mark]	S5系教務委員	5kei kyomu Iin−S					
Numbering	ARC_MAS61015						
Objectives of class							
This thesis research on architect	ture and civil engi	neering is designated	to deepen the know	wledge and enhanc	e the skills of the		
students in their research fields t	through the self-o	riented endeavour wi	th the instruction of	f his/her superviso	r(s).		
Contents of class							
The subjects and the contents of	of the thesis vary	depending on the la	boratory. All studer	ts must present t	neir thesis at the		
end of the course and take a fir	al examination on	the thesis, as a req	uirement for the gr	aduation of the ma	aster course. The		
study for the thesis is planned ar	nd conducted unde	er the guidance of the	e supervisor(s).				
Self Preparation and Review							
Related subjects							
IBD by the laboratory							
TPD by the leberatory							
Notes for reference							
Goals to be achieved							
Evaluation of achievement							
This credit is assigned for all the	process for the p	reparation and presei	ntation of the thesis	5.			
Examination この世							
その他 Other							
Details of examination							
Other information							
Refer to administration office							
Reference URL							
Refer to the URL of each laborat	ory						
Office hours	-						
Refer to administration office.							
Relations to attainment objective	es of learning and	education					
Key words							

## (M45630030)Seismic Evaluation of Existing Buildings[Seismic Evaluation of Existing Buildings]

				28] 28]	. 1				
Subject name[English]	Seismic Evaluatio	n of Existing Buildin	gs[Seismic Evaluation	on of Existing Build	Ings]				
Schedule number	MI43030030	Subject area	Advanced	Required or	Elective				
			and Civil	elective					
			Engineering						
Time of starting a course	Spring term	Day of the	Thu 3~3	Credit(s)	2				
	oping term	week.period	1110.0 0		2				
Faculty	Graduate Progran	n for Master's Degre	e	Subject grade	1~				
Department Offered	Architecture and	Civil Engineering		Beggining	M1				
				grade					
Charge teacher name[Roman	ame[Roman 松井 智哉 MATSUI Tomoya								
alphabet mark]									
Numbering	ARC_MAS52125								
Objectives of class									
This course is intended to intro	duce the Japanese	seismic evaluation	method for existin	g buildings, in part	icular, reinforced				
concrete buildings. The concept	and procedures of	f this method are o	outlined in this cour	se, to gain advanc	ed knowledge to				
evaluate seismic performance of	existing buildings.								
This course is intended to intro	duce the Japanese	seismic evaluation	method for existin	g buildings, in part	icular, reinforced				
concrete buildings. The concept	and procedures of	f this method are o	outlined in this cour	se, to gain advanc	ed knowledge to				
evaluate seismic performance of	existing buildings.								
Contents of class									
1: Introduction									
2: Procedure of Seismic Evaluation	on								
3: Seismic Index of Structure: IS									
4: Irregularity and Time Indexes:	SD and T								
5: First Level Screening Procedu	re								
6: Second Level Screening Proce	dure -Basic Seismi	c Index of Structure	e: E0-						
7: Second Level Screening Proce	dure –Strength Ind	ex: C-							
8: Second Level Screening Proce	dure -Ductility Inde	ex: F-							
9: Judgment on Seismic Safety									
10: Recent Earthquake Disasters	<b>C</b> .								
11: Introduction of Seismic Retro	tit 								
12: Observation of Retrofitted Bu	iliaings								
13: Observation of Structural Tes	sting								
14: Explanation on Assignments									
(Each lectures will be held based	on face-to-face, b	ut it may be change	d to on-demand dep	pending on the situ	ation.)				
1: Introduction									
2: Procedure of Seismic Evaluation	on								
3: Seismic Index of Structure: IS									
4: Irregularity and Time Indexes:	SD and T								
5: First Level Screening Procedu	re								
6: Second Level Screening Proce	dure -Basic Seismi	c Index of Structure	e: E0-						
7: Second Level Screening Proce	dure –Strength Inde	ex: C-							
8: Second Level Screening Proce	dure –Ductility Inde	ex: F-							
9: Judgment on Seismic Safety	9: Judgment on Seismic Safety								
10: Recent Earthquake Disasters									
11: Introduction of Seismic Retro	fit								
12: Observation of Retrofitted Bu	iildings								
13: Observation of Structural Tes	sting								
14: Explanation on Assignments									
(Each lectures will be held based	on face-to-face, b	ut it may be change	d to on-demand dep	pending on the situ	ation.)				
Con Freparauvil and Review									

Related subjects

Notes for textbook
Standard for Seismic Evaluation of Existing Reinforced Concrete Buildings, 2001
Standard for Seismic Evaluation of Existing Reinforced Concrete Buildings, 2001
Notes for reference
Goals to be achieved
To understand nonlinear structural mechanics through learning the Japanese seismic evaluation method for existing buildings.
To understand nonlinear structural mechanics through learning the Japanese seismic evaluation method for existing buildings.
Evaluation of achievement
Report
- S 90 to 100
- A 80 to 89
– B 70 to 79
- C 60 to 69
Report
– S 90 to 100
- A 80 to 89
– B 70 to 79
- C 60 to 69
Examination
レポートで実施
By Report
Details of examination
Other information
Room : D-807
E-mail : matsui@ace.tut.ac.jp
Room : D-807
E-mail:matsui@ace.tut.ac.jp
Reference URL
http://rc.ace.tut.ac.jp/matsui/index.html
http://rc.ace.tut.ac.jp/matsui/index.html
Office hours
Wednesday 14:00-17:00
Wednesday 14:00-17:00
Relations to attainment objectives of learning and education
Key words

(M45630060)Building S	cience: Indoor Air Quality and Ve	entilation[Building	Science: Indoor Air	Quality and Ve	ntilation]			
Subject name[English]	Building Science: Indoor Air Ventilation]	Quality and V	entilation[Building S	Science: Indoor	· Air Quality and			
Schedule number	M45630060	Subject area	Advanced Architecture and Civil Engineering	Required or elective	Elective			
Time of starting a course	Spring term	Day of the week.period	Wed.4~4	Credit(s)	2			
Faculty	Graduate Program for Master's	Degree		Subject grade	1~			
Department Offered	Architecture and Civil Engineer	ing		Beggining grade	M1			
Charge teacher name[Roman alphabet mark]	島﨑 康弘,田島 昌樹 SHIMA	ZAKI Yasuhiro, T <i>i</i>	AJIMA Masaki					
Numbering	ARC_MAS54125							
Objectives of class								
本コースは、主として短 する. 授業では建築環 る. This course aims at pr The goal is to help environmental system. <b>Contents of class</b>	境とその制御に関する新しい技術 roviding the practical strategies t professionals update their kn and its control.	な至内도気環境 「を方法に関連し o realize a good l owledge related	を実現するにのの実 に知識を学び、高い puilding environment to new techniques	転的力法を使う 専門性を身につ , mainly air quai s and methods	いりることを日前とけることを目標とす lity and ventilation. s on architectural			
理解するための導入と 1. 室内空気環境の概 2. 建物由来の疾病と 3. 室内空気の物理的・ 4. 空気汚染物質の測 5. 材料の化学物質放 6. 室内空気質の予測 7. 空気流動の CFD 解 8. 換気システムの性間 9. 汚染物質制御のため 10. IAQ に関する人が作 11. IAQ に関する最近で 13. IAQ に関する最近で 14. IAQ 問題に関する 15. IAQ 問題に関する	<ul> <li>本コースは,建物における良好な空気環境や快適性を実現するための室内空気質の制御と換気手法を専門的に高いレベルで 理解するための導入として提供される。本コースは以下のトピックスで構成される。</li> <li>1. 室内空気環境の概要</li> <li>2. 建物由来の疾病と室内空気質</li> <li>3. 室内空気の物理的・化学的特徴</li> <li>4. 空気汚染物質の測定技術</li> <li>5. 材料の化学物質放散と吸脱着のモデリング</li> <li>6. 室内空気質の予測手法</li> <li>7. 空気流動の CFD 解析</li> <li>8. 換気システムの性能評価</li> <li>9. 汚染物質制御のための換気システム設計</li> <li>10. IAQ に関するガイドライン、コード及び基準</li> <li>11. IAQ に関する最近の研究開発(1)</li> <li>12. IAQ に関する最近の研究開発(2)</li> <li>13. IAQ に関する最近の研究開発(3)</li> <li>14. IAQ 問題に関する討論(1)</li> <li>15. IAQ 問題に関する討論(2)</li> </ul>							
本学の新型コロナウィルス感染拡大防止のための活動基準の変更に伴い、授業内容および成績の評価法に変更が生じる場合 があります。 The course is offered as an introduction to a professional-level understanding of indoor air quality control and ventilation method for realizing a better air environment and comfort in buildings. The course consists of the following topics:								
<ol> <li>Overview of indoor a</li> <li>Building related illne:</li> <li>Physical/chemical ci</li> <li>Measurement techni</li> <li>Modeling of material</li> <li>Prediction method for</li> <li>CFD analysis of air r</li> <li>Performance evaluat</li> <li>Ventilation system d</li> <li>Guidelines, codes a</li> <li>Current research a</li> <li>Current research a</li> </ol>	air environment (face-to-face) ss and indoor air quality (face-to- haracteristics of air quality (face- ques of air pollutants (face-to-fa emission and sorption (face-to-fa or indoor air quality (IAQ) in room novement (face-to-face) tion of ventilation systems (face- lesign for pollutant control (face- nd standard on IAQ (face-to-fac nd development on IAQ (1) (on-d nd development on IAQ (2) (on-d	-face) -to-face) ice) face) is (face-to-face) to-face) e) e) lemand) lemand)						

<ol> <li>13. Current research and development on IAQ (3) (on-demand)</li> <li>14. Discussion on IAQ related issues (1) (face-to-face)</li> </ol>								
15. Discussion on IAQ related issues (2) (face-to-face)								
If there will be any	changes regar	aing Toyonashi Ui	niversity of leci	ant are subject to a	strictions Leve	i for Preventing the		
Spread of Corona viru	Is, the course (	content and evalua	ition of achievem	ent are subject to c	nange.			
Self Preparation and Review								
In order to enhance a	learning effect	, prepare for and r	eview the lectur	e for around 90 minu	tes each.			
Related subjects								
Building science: Ther	mai Environme	int and vernacular	architecture					
INDLES TOF LEXLDOOK 即はままて次約を配た。	+ z							
労 理 9 る 貝 科 ど 能 切 9 の 見 科 ど 能 切 9 の 見 科 ど 能 切 9 の	10 will be distribu	ام م <del>ا</del>						
Defense at				-	ICDN	070000000000		
Reference i	Book title	Environmental 3			ISBN Dublish	9760230290606		
	Autnor	Randali McMullan	Publisher	MACMILLAN LTD	Publish year	2012		
Notes for reference						<b>I</b>		
特になし								
N/A								
Goals to be achieved								
本コースは,シックビノ	ルディングシン	ドロームの背景と	室内空気質を制	卸することによって良	し好な空気環境	を実現するための実		
践的な手法を理解し,	健康的で持続	可能な建築を提示	することを達成目	標にする.さらに,	引連する周辺領	真域の知見を広げる.		
Achievement level of	this course is	to understand th	e background of	sick building syndro	ome and the p	ractical strategies to		
realize a good air env	vironment by c	ontrolling indoor a	air quality and ve	ntilation in buildings	, and also pro	pose the healthy and		
sustainable buildings. I	In addition, the	knowledge of surr	ounding subjects	will be established.				
Evaluation of achieve	ment							
本科目に関連するレオ	ポートを課し、そ	の達成度によって	評価する。					
Reports related to this subject are reviewed to evaluate the achievement level.								
Examination								
レポートで実施								
By Report								
Details of examination	า							
特になし								
N/A								
Other information								
特になし								
N/A								
Reference URL								
特になし								
N/A								
Office hours								
水曜日 13:00-15:00								
Wed. 13:00-15:00, any	time upon requ	lest.						
Relations to attainme	nt objectives o	f learning and edu	cation					
Key words 空気質,健康建築,シ Indoor Air Quality, Hea	ックビル症候郡 althy Building,	<sup>羊,</sup> 換気, 建築環境 Sick Building Synd	į rome, Ventilatior	, Building Science				

(M45630200)Advanced Structural System Planning and Design II[Advanced Structural System Planning and Design II]

Subject name[English]	Advanced Struct and Design II]	tural System Plannir	ng and Design II[Ad	vanced Structural	System Planning	
Schedule number	M45630200	Subject area	Advanced Architecture and Civil Engineering	Required or elective	Elective	
Time of starting a course	Spring term	Day of the week,period	Intensive	Credit(s)	2	
Faculty	Graduate Progra	m for Master's Degre	e	Subject grade	1~	
Department Offered	Architecture and	Architecture and Civil Engineering			M1	
Charge teacher name[Roman alphabet mark]	S5系教務委員, 齊藤 大樹, 中澤 祥二, 三浦 均也, 松井 智哉, 松本 幸大, 松田 達 5kei kyomu Iin-S, SAITOH Taiki, NAKAZAWA Shoji, MIURA Kinya, MATSUI Tomoy MATSUMOTO Yukihiro, MATSUDA Tatsuya					
Numbering	ARC_MAS52025					
Objectives of class						
It depends on the laboratory. T	he resistered stu	dents are required	to attend all the s	eminars, which is	arranged by the	
laboratory supervisor for the spe	cial study subject	s related to the cur	rent research activit	ty of the laborator	y. The scheduled	
program of the seminars is annou	inced by the super	visor at the guidance	e of the seminar.			
Contents of class						
In each seminar, students purs	sue several resea	rch topics and/or	undertake projects	collectively and	solely under the	
instruction of the faculty member	rs of the departme	nt and/or those of o	ther departments.			
Self Preparation and Review						
Review each lecture and prepare	for the next class	with reference to th	e textbook.			
Related subjects						
N/A						
Notes for textbook						
Papers(resume)will be distributed	1					
Notes for reference						
N/A						
Goals to be achieved						
Evaluation of achievement						
This credit is assigned for all the	e process for the	oral presentation or	report. But fundam	entally the estima	tion of this class	
would depends on the supervisor	of each laboratory	/.				
Examination						
レホートで実施						
by report						
Depart						
Other information						
Reference LIRI						
N/A						
Office hours						
Before/after the class						
Relations to attainment objective	s of learning and e	aducation				
Key words						

(M45630220)Advanced Environmental System Planning and Design II[Advanced Environmental System Planning and Design II]

Subject name[English]	Advanced Environmental System Planning and Design IILAdvanced Environmental System						
	Planning and Design II]						
Schedule number	M45630220	Subject area	Advanced	Required or	Elective		
			Architecture	elective			
			and Civil				
			Engineering				
Time of starting a course	Spring term	Day of the	Intensive	Credit(s)	2		
		week,period					
Faculty	Graduate Program	n for Master's Degre	ee	Subject grade	1~		
Department Offered	Architecture and Civil Engineering			Beggining	M1		
				grade			
Charge teacher name[Roman	S5系教務委員,	田島 昌樹,井上 隆	隆信,加藤 茂,島﨑	康弘,横田 久里	子,東海林 孝幸		
alphabet mark]	5kei kyomu Iin-S, TAJIMA Masaki, INOUE Takanobu, KATO Shigeru, SHIMAZAKI Yasuhiro,						
	YOKOTA Kuriko,	YOKOTA Kuriko, TOKAIRIN Takayuki					
Numbering	ARC_MAS54025						
Objectives of class							
It depends on the laboratory T	he resistered stur	lents are required	to attend all the s	eminars which is	arranged by the		
laboratory supervisor for the spe	cial study subjects	related to the cur	rent research activit	ty of the laborator	v The scheduled		
program of the seminars is appou	inced by the super-	visor at the guidance	of the seminar		y. The scheduled		
Contents of class	need by the superv		of the seminar.				
In each comings students	up coveral reason	oh topics and/ar	undertake projecto	collectively and	colely under the		
in each seminar, students purs	ue several resear	ch lopics and/or	the sector secto	collectively and	solely under the		
Instruction of the faculty member	's of the departmer	nt and/or those of o	ther departments.				
Sen Preparation and Review	<b>6</b>						
Review each lecture and prepare	for the next class	with reference to th	e textbook.				
Related subjects							
N/A							
Notes for textbook							
N/A							
Notes for reference							
N/A							
Goals to be achieved							
Understand the contents of the la	atest research pape	ers and debate with	supervisor.				
Create a research paper (includin	g English).						
Evaluation of achievement							
This credit is assigned for all the	e process for the (	oral presentation or	report. But fundam	entally the estima	tion of this class		
would depends on the supervisor of each laboratory.							
Examination							
レポートで実施							
By Report							
Details of examination							
Report							
Other information							
N/A							
Reference URL							
Office hours							
Relations to attainment objectives of learning and education							
Relations to attainment objectives of learning and education							
Karamada							
Key words							
## (M45630240)Advanced Regional System Planning and Design II[Advanced Regional System Planning and Design II]

Subject name[English]	Advanced Regional System Planning and Design II[Advanced Regional System Planning and Design II]						
Schedule number	M45630240	Subject area	Advanced Architecture and Civil	Required or elective	Elective		
Time of starting a course	Spring term	Day of the	Intensive	Credit(s)	2		
Foouthy	Graduate Progr	meek,period		Subject grade	1~		
Paculty Department Offered	Architecture an	d Civil Engineering	56	Beggining	M1		
				grade			
Charge teacher name[Roman	S5系教務委員	松島 史朗 浅野 約	迎一郎 渋澤 博幸.	水谷晃啓、小野	悠. 杉木 直. 松		
alphabet mark]	尾 幸二郎 5ke	kyomu Iin-S, MATSL	JSHIMA Shiro, ASAN	NO Junichiro, SHIE	USAWA Hiroyuki,		
	MIZUTANI Akih	iro, ONO Haruka, SU(	GIKI Nao, MATSUO I	Kojiro	<b>2</b>		
Numbering	ARC_MAS53025	5					
Objectives of class							
It depends on the laboratory. T	he resistered st	udents are required	to attend all the s	eminars, which is	arranged by the		
laboratory supervisor for the spe	cial study subjec	ts related to the cur	rent research activi <sup>.</sup>	ty of the laborator	y. The scheduled		
program of the seminars is annou	nced by the supe	rvisor at the guidance	e of the seminar.	-	•		
Contents of class							
In each seminar, students purs	ue several rese	arch topics and/or	undertake projects	collectively and	solely under the		
instruction of the faculty member	rs of the departm	ent and/or those of o	ther departments.				
Self Preparation and Review			•				
Review each lecture and prepare	for the next class	s with reference to th	ie textbook.				
Related subjects							
N/A <b>Notes for textbook</b> Papers(resume)will be distributed							
Notes for reference							
N/A							
Goals to be achieved							
Evaluation of achievement							
This credit is assigned for all the	e process for the	oral presentation or	report. But fundam	entally the estima	tion of this class		
would depends on the supervisor	of each laborator	<b>у</b> .					
Examination							
レポートで実施							
By Report							
Details of examination							
Report							
Other information							
N/A							
N/A							
N/A Deletione to etteinment abiantic		advaction					
Key words							

### (M45630350)Water Environment Engineering[Water Environment Engineering]

Subject name[English]	Water Environmer	nt Engin	eering	- Wate	r Environment Engin	eering]	
Schedule number	M45630350	Subie	ct are	a.	Advanced	Required or	Elective
				-	Architecture	elective	
					and Civil		
					Engineering		
Time of starting a course	Spring term	Day	of	the	Tue.4~4	Credit(s)	2
		week,	period				
Faculty	Graduate Progran	n for Ma	ster's	Degre	e	Subject grade	1~
Department Offered	Architecture and	Civil En	gineer	ing		Beggining grade	M1
Charge teacher name[Roman	井上 隆信,横田	久里子	- INOL	JE Tał	anobu, YOKOTA Ku	iriko	
alphabet mark]							
Numbering	ARC_MAS54025						
Objectives of class							
To know and understand the wate	er quality change in	environ	ment	and tr	eatment system.		
To know and understand the wate	er quality manageme	ent.					
Contents of class							
All lectures are face-to-face.							
water quality change in environme	ant and treatment of	vetem					
1 fundamental equation of the	mass balance	system.					
2 picton flow model							
2 pistori now model							
4 reaction rate							
5 complete mixing model with r	eaction						
5 complete mixing model with reacting	eaction						
o pistori now model with reaction	50						
drinking water treatment and was	te water treatment						
7 rapid sand filtration process							
8 activated sludge treatment pr	00855						
(Inque)	00000						
(Indue)							
Weter a listente and an an anno 1	L						
water pollutants and management	C .						
9-10 environmental standard							
12 14 shawiada in water and							
13-14 chemicals in water envir	onment						
(Yokota)							
If there will be any changes regar	ding Toyohashi Univ	versity o	of Tec	hnolog	gy Activity Restriction	ons Level for	
Preventing the Spread of Corona	virus, the course c	ontent a	and ev	aluati	on of achievement a	re subject to chan	ge.
If there is any changes about a c	ass schedule, I will	inform y	you on	Goog	le Classroom or KY	OMU JOHO SYST	EM.
Self Preparation and Review							
Review each lecture and prepare	for the next class v	with refe	erence	e to th	e textbook.		
Related subjects							
N/A							
Notes for textbook							
No textbook is required for this c	lass.						
Notes for reference							
N/A							
Goals to be achieved							
To understand the water pollution	n and environmenta	l quality	stand	lard.			
To understand the piston flow an	d complete mixing r	nodel					
Evaluation of achievement							
[Evaluation basis] Students who a	attend all classes w	ill be ev	aluate	d as f	ollows:		
S: Achieved all goals and obtained	d total points of rep	orts and	d pres	entati	on, 90 or higher (out	t of 100 points).	
A: Achieved 80 % of goals and obtained total points of reports and presentation, 80 or higher (out of 100 points).							

B: Achieved 70 % of goals and obtained total points of reports and presentation, 70 or higher (out of 100 points).
C: Achieved 60 % of goals and obtained total points of reports and presentation, 60 or higher (out of 100 points).
Examination
レポートで実施
By Report
Details of examination
N/A
Other information
N/A
Reference URL
N/A
Office hours
Wednesday 12:00- 13:00
Relations to attainment objectives of learning and education
Kay words

name[English]	Advanced U	rban Planning[Advanced	d Urban Planning]				
Schedule number	M45630370		Subject area	Advanced Architecture and Civil Engineering	Required or elective	Elect	
Time of starting a course	Spring term		Day of the week.period	Tue.1~1	Credit(s)	2	
Faculty	Graduate Pr	ogram for Master's Deg	ree	1	Subject grade	1~	
Department Offered	Architecture	and Civil Engineering	and Civil Engineering				
Charge teacher name[Roman alphabet mark]	浅野 純一自	阝,小野 悠 ASANO Ju	nichiro, ONO Harı	uka	8.000		
Numbering	ARC_MAS53	025					
9) ~15) 第 2 課題(小野 各々の課題は、 基礎的文献の収集(1~ 対象地域の課題検討、 計画立案(1~2回) 成果発表(1回) 等で構成される。 1st week: class guidanc 2nd-8th: first topic by p 9th-15th: second topic each topic composed th data and documents co investigation and interp	を担当) ・2回) 問題整理(2~ e professor Asar by associate p ne following co llection:one or retation about	3回) oo orofessor Ono ntents, for example, as two weeks: planning problem in tar	get area (includin	ig temporary presen			
planning working::one or	r two weeks:				tation):two or th	ree we	
	(aal				tation):two or th	ree we	
final presentation:one w Self Preparation and Re	eview				tation):two or th	iree we	
final presentation:one w Self Preparation and Re Related subjects 地区計画、都市地域計 district planning, urban Notes for textbook 教科書:講義時に資料語	aview 画、地区計画・ and regional p 配布	「同演習、空間情報演習 lanning, spatial informat	ion planning		tation):two or th	ree we	
final presentation:one w Self Preparation and Re Related subjects 地区計画、都市地域計 district planning, urban Notes for textbook 教科書:講義時に資料配 original texts will be del Reference1	aview 画、地区計画・ and regional pl 配布 ivered in the c	同演習、空間情報演習 lanning, spatial informat lass.	ion planning		ISBN	ree we	
final presentation:one w Self Preparation and Re Related subjects 地区計画、都市地域計 district planning, urban Notes for textbook 教科書:講義時に資料評 original texts will be del Reference1	画、地区計画· and regional pl 配布 ivered in the c Book title Author	同演習、空間情報演習 lanning, spatial informat class. toshikeikaku manual city planning	ion planning Publisher	maruzen	ISBN Publish	ree we	
final presentation:one w Self Preparation and Re Related subjects 地区計画、都市地域計 district planning, urban Notes for textbook 教科書:講義時に資料評 original texts will be del Reference1	画、地区計画· and regional p 配布 ivered in the c Book title Author	同演習、空間情報演習 lanning, spatial informat toshikeikaku manual city planning institute of japan 都市計画マニュアル	ion planning Publisher	maruzen	ISBN Publish year ISBN	ree we	
final presentation:one w Self Preparation and Re Related subjects 地区計画、都市地域計 district planning, urban Notes for textbook 教科書:講義時に資料評 original texts will be del Reference1 Reference2	画、地区計画 and regional p 記布 ivered in the c Book title Author Book title Author	同演習、空間情報演習 lanning, spatial informat toshikeikaku manual city planning institute of japan 都市計画マニュアル 日本都市計画学会	ion planning Publisher Publisher	maruzen 丸善	ISBN Publish year ISBN Publish		
final presentation:one w Self Preparation and Re Related subjects 地区計画、都市地域計 district planning, urban Notes for textbook 教科書:講義時に資料配 original texts will be del Reference1 Reference2 Reference3	画、地区計画· and regional pl 配布 ivered in the c Book title Author Book title Author	同演習、空間情報演習 lanning, spatial informat city planning institute of japan 都市計画マニュアル 日本都市計画学会 kenchiku sekkei shiry	ion planning Publisher Publisher	maruzen 丸善	ISBN Publish year ISBN Publish year ISBN		
final presentation:one w Self Preparation and Re Related subjects 地区計画、都市地域計 district planning, urban Notes for textbook 教科書:講義時に資料評 original texts will be del Reference1 Reference2 Reference3	画、地区計画· and regional pi 配布 ivered in the c Book title Author Book title Author	同演習、空間情報演習 lanning, spatial informat toshikeikaku manual city planning institute of japan 都市計画マニュアル 日本都市計画学会 kenchiku sekkei shiry architectural	ion planning Publisher Publisher ro syusei Publisher	maruzen 丸善	ISBN Publish year ISBN Publish year ISBN Publish Publish		
final presentation:one w Self Preparation and Re Related subjects 地区計画、都市地域計 district planning, urban Notes for textbook 教科書:講義時に資料詞 original texts will be del Reference1 Reference2 Reference3	aview aview and regional p 配布 ivered in the c Book title Author Book title Author Book title Author	同演習、空間情報演習 lanning, spatial informat toshikeikaku manual city planning institute of japan 都市計画マニュアル 日本都市計画学会 kenchiku sekkei shiry architectural institue of japan	ion planning Publisher Publisher Publisher Publisher	maruzen 丸善 maruzen	ISBN Publish year ISBN Publish year ISBN Publish year		

	Author	日本建築学会	Publisher	丸善	Publish	
Notes for reference					year	
Goals to be achieved						
・地区レベルの計画立著	をプロヤスが理	解できること				
・課題テーマによる対象	地域の計画課	題が特定できること				
・課題テーマによる計画	「課題に対して、	対策が立案できること				
<ul> <li>・地区計画に関わるデ+</li> </ul>	ザインができる.	ンジャン エネ (C O - C - と				
1. to be able to underst	and planning p	- <u> </u>	planning			
2. to be able to specify	planning proble	ems in the target area	along workshop t	opic		
3. to be able to make th	ne countermeas	sure against the above	planning problem	1		
4. to be able to design a	as district scale	e planning				
Evaluation of achievem	ent					
課題に対する成果物に	よって評価する	0.0				
the result of case study	/ report(100 po	ints)				
A: 80 or higher (out of	100 points).					
B: 65 or higher (out of	100 points).					
C: 55 or higher (out of	100 points).					
Examination						
レポートで実施						
By Report						
Details of examination						
Other information						
D-708, 6836, asano@a	ce.tut.ac.ip					
professor Asano:D-708	. PHONE44-68	36. asano@ace.tut.ac.ir	)			
lecturer Ono:D-704 ond	@ace.tut.ac.jp	, 51				
Reference URL						
http://urbandesign.web	.fc2.com/MOTI	HER-hp/STU-hp/index	k.html			
professor ASANO:http	://urbandesign	.web.fc2.com/MOTHEF	R-hp/STU-hp/ind	dex.html		
Office hours						
毎週木曜の12:00-13:	00					
office hour:Tuesdays fr	om 12:30-13:30	)				
Relations to attainment	t objectives of	learning and education	l			
本科目は以下の「大学」	院キャリアアップ	ププログラム」に該当す	る.			
(建築コース)						
建築デザイナー、都市・	地域プランナー	-				
(社会基盤コース)						
都市・地域プランナー						
本科目は以下の「建築:	士試験の大学院	<b>完における実務訓練」</b> に	ニ該当する.			
建築士試験指定科目	関連科目(演習	・実験・実習)				
Key words		by /井				
地区 都市テサイン 土	地利用 景観	登 <b>师</b> · · · ·				
district scale, urban des	sign, land use, l	andscape preservation				

# (M45630380)Advanced Architectural Design[Advanced Architectural Design]

Subject name[English]	Advanced Archit	ectural Design	[Adva	nced Architectural [	Design]		
Schedule number	M45630380	Subject are	a	Advanced	Required or		Elective
				Architecture	elective		
				and Civil			
				Engineering			
Time of starting a course	Spring term	Day of week period	the	Tue.2~2	Credit(s)		2
Faculty	Graduate Program	m for Master's	Degre	e	Subject gra	de	1~
Department Offered	Architecture and	Architecture and Civil Engineering			Beggining		M1
			5		grade		
Charge teacher name[Roman	水谷 晃啓 MIZU						
alphabet mark]							
Numbering	ARC_MAS53225						
Objectives of class							
Advanced Architectural Design	is a kind of digital	design studio	. Lea	rn the necessary k	nowledge and	d desi	gn techniques in
designing and planning public bui	Idings and spaces t	through case s	studies	s and design works.	Therefore, the	his cla	ss is appropriate
for students who have studied ar	chitectural design.						
Contents of class							
1. Guidance, "What is architectur	al design?"						
2. A requirement for designing pu	blic facilities and p	ublic spaces 1					
3. A requirement for designing pu	blic facilities and p	ublic spaces 2					
4. What are the knowledge and de	esign techniques ne	ecessary for de	esignir	ig public facilities ar	nd public spac	ces?	
5. Workshop 1 for learning design	technology (basic)						
b. Workshop 2 for learning design	technology (basic)	)					
7. Workshop 3 for learning design	technology (basic)						
8. Workshop 4 for learning design	technology (applic	ation)					
5. worksnop 5 for learning design	technology (applic	ation)					
11 Design and planning design	facilities and an and						
12 Design and planning of public	facilities and space	s i (ourvey)	ork)				
13 Design and planning of public	facilities and space	as 3 (decign w	ork)				
14. Design and planning of public	facilities and space	es 4 (Pronocal)	)				
15. Summarv							
Self Preparation and Review							
Please survey the buildings relate	ed to each theme a	as much as po	ssible.	investigate its soci	al situation. a	nd pre	epare to describe
your thoughts.							
Related subjects							
N⁄A							
Notes for textbook							
N∕A							
Notes for reference							
Please refer them(sorry, Japanes	se only).						
建築設計資料集成·総合編·日本	;建築学会編(丸善	、2001年)					
建築設計資料集成·拡張編·集会	・市民サービス・日	本建築学会編	(丸善	、2002 年)			
Goals to be achieved							
To master design technology for	designing and planr	ning public buil	dings	and social infrastruc	ture facilities	S	
Evaluation of achievement							
The grades will be evaluated by c	omprehensive con	sideration base	ed on	discussion (30%) and	l reports (70%	6) in th	ne course.
[Evaluation basis] Students who	attend all classes v	vill be evaluate	d as f	ollows			
S: Achieved all goals and obtaine	d total points of re	ports. 90 or his	gher (d	out of 100 points).			
A: Achieved 90 % of goals and ob	tained total points	of reports. 80	or hig	her (out of 100 point	ts).		
B: Achieved 80 % of goals and ob	tained total points	of reports. 70	or hig	her (out of 100 poin	ts).		
C: Achieved 70 % of goals and ob	tained total points	of reports 60	or hig	her (out of 100 poin	ts).		
Examination							
· · · · · · · · · · · · · · · · · · ·		<u></u>	0				
レポートで実施		<u></u>	0				
レポートで実施 By Report		<u></u>					

Other	information	

Reference URL

Office hours

Relations to attainment objectives of learning and education

Key words

# (M45630390)Advanced Computational and Environmental Economics[Advanced Computational and Environmental Economics]

Subject name[English]	Advanced Com	putational and Env	rironmental Econom	nics[Advanced Co	mputational and
	Environmental E	conomics			
Schedule number	M45630390	Subject area	Advanced	Required or	Elective
			Architecture	elective	
			Engineering		
Time of starting a course	Spring term	Day of the	Eri 4~4	Credit(e)	2
	oping term	week period	111.7 7	Of Builds	2
Faculty	Graduate Progra	m for Master's Degre	e	Subject grade	1~
Department Offered	Architecture and	l Civil Engineering		Beggining	M1
				grade	
Charge teacher name[Roman	渋澤 博幸 SHIB	USAWA Hiroyuki			
alphabet mark]					
Numbering	ARC_MAS55025				
Objectives of class					
In this course, students learn the	economic modelin	g techniques and the	e simulation method	ology.	
In this course, students learn the	economic modelin	ig techniques and the	e simulation method	ology.	
Contents of class					
1–2: Input–Output Model					
3-4: Simple 2 Sectors General Ed	quilibrium Model				
5–6: Inter-Sectoral General Equil	ibrium Model				
7–8: Simulation and Numerical Ex	ample				
9-11: Open Model with Exports a	nd Imports				
12–13: General Equilibrium Model	with Public Secto	r			
14–15: Simulation and Numerical	Example				
	·				
If there will be any changes regar	ding Tayahaahi Un	iversity of Technolog	m. Activity Postricti	and Loval for	
If there will be any changes regard	wing Toyonashi On	contant and evoluati	gy Activity Restriction	re aubient to abon	<b>70</b>
1 & Length Output Madel	virus, the course	content and evaluation	on of achievement a	re subject to chan	ge.
1-2: Input-Output Model					
3-4: Simple 2 Sectors General Equil	juliibrium wodel				
5-0: Inter-Sectoral General Equil					
7-8: Simulation and Numerical Ex					
9-11: Open Model with Exports a	na Imports				
14-15: Simulation and Numerical	Example	r			
14-15. Simulation and Numerical	Example				
10 st 10 st					
If there will be any changes regar	ding Toyohashi Un	iversity of Technolog	gy Activity Restriction	ons Level for	
Preventing the Spread of Corona	virus, the course	content and evaluation	on of achievement a	re subject to chan	ge.
Self Preparation and Review					
Required Assignments					
Students are required to learn to	pics and exercises	before and after each	ch class.		
Studente ere required to learn to	ning and avanting	hafava and after as	ah alaaa		
Students are required to learn to	pics and exercises	before and after eac	ch class.		
Norra Economia Miara Economia	on Spotial Frances	in Suntam Analysi-			
Macro Economic, Micro Economic	os, opacial Econom	ic System Analysis			
Notes for toythook	os, opacial Ecoriom	o System Analysis			
Depers will be distributed					
Papers will be distributed.					
Goals to be achieved					
Acquiring the theory of the gene	eral equilibrium moo	lel.			

Constructing a general equilibration model using an numerical data. Evaluating impacts of an economic polity using the general equilibrium model. Acquiring the theory of the general equilibrium model. Constructing a general equilibration model using an numerical data.

Evaluating impacts of an economic polity using the general equilibrium model.

#### Evaluation of achievement

Reports must be submitted. Report 100%.

S:90 Points or higher A: 80 Points or higher, B: 70 points or higher, C:60 points or higher, D: Less than 60 points

Reports must be submitted. Report 100%.

S:90 Points or higher A: 80 Points or higher, B: 70 points or higher, C:60 points or higher, D: Less than 60 points

-vomin offion	
CINTERNATION	

レポートで実施

By Report Details of examination

N/A

Other information

N/A

Reference URL

www.pm.ace.tut.ac.jp www.pm.ace.tut.ac.jp

Office hours

At any time. Please contact Shibusawa by e-mail in advance. At any time. Please contact Shibusawa by e-mail in advance.

Relations to attainment objectives of learning and education

Key words

Computational Economics, Simulation Computational Economics, Simulation

# (M45630410)Advanced Transportation and Urban Planning[Advanced Transportation and Urban Planning]

Subject name[English]	Advanced Transp	ortation and Urban	Planning[Advanced ]	Transportation and	Urban Planning]		
Schedule number	M45630410	Subject area	Advanced	Required or	Elective		
			Architecture	elective			
			and Civil				
			Engineering				
Time of starting a course	Spring term	Day of the	Fri.2~2	Credit(s)	2		
		week,period					
Faculty	Graduate Progran	n for Master's Degre	e	Subject grade	1~		
Department Offered	Architecture and	Civil Engineering		Beggining grade	M1		
Charge teacher name[Roman	杉木 直 SUGIKI	Nao		-	I.		
alphabet mark]							
Numbering	ARC_MAS53325						
Objectives of class							
To obtain the advanced knowledg	e of theories and n	nethods for policies	and planning for tra	nsportation and urb	oan planning.		
Contents of class		•		•			
By using reports and papers on	transportation and	d urban structure, s	tudents learn the a	advanced theories	and methods for		
transportation and urban planning	Discussion betwe	en the lecturer and	students will be per	formed in the lectu	re time.		
Self Preparation and Review			· ·				
Review each lecture and prepare	for the next class	with reference to th	e textbook.				
Related subjects							
Advanced Transportation Enginee	ering						
Advanced Transportation System	and Transport Eco	onomics					
Notes for textbook							
Textbooks and scientific papers s	shall be announced	at the start of the o	class.				
Notes for reference							
N/A							
Goals to be achieved							
1.To understand the necessity an	d significance of po	olicy and planning fo	r transportation and	l urban structure.			
2.To understand theories and met	thodologies in the a	above mentioned fiel	ds.				
Evaluation of achievement							
Evaluation of achievement: The a	cademic score of e	each student is evalu	uated by reports (10	0%).			
Criteria of evaluation: Score S is	90 or higher, scor	e A is 80 or higher	to lower than 90, so	ore B is 70 or hig	her to lower than		
80, score C is 60 or higher to low	er than 70.						
Examination							
レポートで実施							
By Report							
Details of examination							
N/A							
N. Sugiki:D-705, 6833, sugiki@a	ce.tut.ac.jp						
		,					
N. Sugiki: https://sites.google.col	m/tr.ace.tut.ac.jp/r	nome/en					
Paletione to attainment chiesting		ducation					
	o or loarning and 6	uuuauon					
Key words							
Transportation system Urban Pla	nning Urhan struct	ture. Simulation mor	el Evaluation meth	od 実務経験			
Transportation system. Urban Pla	nning, Urban struct	ture, Simulation mod	lel, Evaluation metho	od			
		.,	,				