Syllabus

International Master's Degree Program (2018-Fall Term)

Subject name[Endial]	Culture and Com		and Communication	n I]			
	MA0020020			Demuine	Elective		
Schedule number	M40030030	Subject area	General	Required or	Elective		
Time of starting a second	Eall tarma	Davis of th			0		
lime of starting a course	rail term	Day of the	inu.i~1	Grean(S)	2		
Faculty	Graduate Program	n for Master's Degre))e	Subject grade	1~		
Department Offered	Mechanical Fro	ineering Architec	ture and Civil	Beggining grade	M1		
Soparanone ondrou	Engineering Fle	ctrical and Flectr	onic Information	Sopering Brade			
	Engineering Co	mouter Science	and Engineering				
	Applied Chemistr	v and Life Science	Engineering,				
Charge teacher name[Roman	池松 峰里 IKFM	ATSU Mineo		1	1		
alphabet mark]							
Numbering	GEN LIB52325						
Objectives of class							
After completing the course stud	ente would be arti	cinated to be ower-	of language loors	m motivation and h	eliefe with record		
to foreign language teaching in la	ents would be antic	opated to be aware	or language learnin	ig, molivation and b	eners with regard		
Contents of alace	pari.						
Wook 1 Introduction							
Week 2 Grouping and Topic Assig	innent tion - Universal O						
Week / Dresentation and D	ion - Universal Gr	ammar (UG) -					
Week 5 Terie 2.1	tion - Oritica L.D	od Hungth: (OD))_				
Week 6 Procentation / D'	icion - Unitical Peri	ou Hypotnesis (CPH	<i>i</i> -				
Week 7 Topic 2: Therest D	flanguage :						
Week & Procentation and D	i Language -						
Week 0 Wreentation and Discuss	ion -						
Week 10 Tenie 4. L 1	ning of last '	*					
Week 11 Procentation and D	ning of Ln Learning	5 -					
Week 12 Tonio 5: Maturation and Discus	SIUII	i+v _					
Week 12 Topic J. Wotivation - Cla	iss work Applicabili	ity —					
Week 14 Topio 6: Poliofo - On La	Jearning –						
Week 15 Presentation and Discuss							
HOR TO THESE MALION AND DISCUS	5.011						
Salf Dranauation and Davian							
		fau diagonata - D. t. 1	المستعام الأسما	he heating for			
Download and use the materials u	p on a cloud drive	ior discussion. Detai	is will be given at t	ne beginning of the	course.		
Related subjects							
Notes for textbook							
Notes for reference					_		
Goals to be achieved							
1. To gain an insight into language	acquisition and lea	arning.					
2. To discuss foreign language lea	rning in Japan.						
3. To understand the importance of non-cognitive skills.							
Evaluation of achievement							
Coursework 50% (Report 20%, Pre	sentation 30%), Cla	ss Contribution 50%					
S: 100 - 90							
A: 89 - 80							
R: 79 – 70							
C: 69 - 60							
D: 59 - 0							
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

Drop-in basis. Relations to attainment objectives of learning and education

電気・電子情報工学専攻 (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、自然と人間との共生、人類の幸福・健康・福祉について考える能力

Key words

(M40030090)Principles o	f Japanese	Grammar[Princip	oles of J	Japanese Gi	rammar]
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Subject name[English]	Principles of Japanese Gramma	ar[Principles of Ja	panese Grammar]		
Schedule number	M40030090	Subject area	General courses	Required or elective	Elective
Time of starting a course	Fall term	Day of the week,period	Thu.1~1	Credit(s)	2
Faculty	Graduate Program for Master's	Degree		Subject grade	1~
Department Offered	Mechanical Engineering, Arc	chitecture and	Civil Engineering,	Beggining	M1
	Electrical and Electronic I	nformation Engir	neering, Computer	grade	
Charge teacher	Science and Engineering, Applie	ed Chemistry and	Life Science		
name[Roman alphabet					
mark]					
Numbering	GEN_LIB51425				
Objectives of class					
This course aims to provi	ide an opportunity to understand	an overview of el	ementary Japanese g	rammar for the	very beginners.
In order to concentrate	on grammar, students will not le	arn Japanese lett	ers and conversation	n. The course w	ill be taught in
English, and progress rapi	idly.				
Contents of class	to the course and remark feature	a of language			
UI (10/04) Introduction	to the course and general feature	es of Japanese			
02 (10/11) Pronunciation	n, Lesson 1: Copula, Particle [″] wa	″ [topic], and Dec	larative, negative, and	d interrogative s	entence
03 (10/18) Lesson 2 and	3: Demonstratives and Particle	"no" [possession]			
04 (10/25) Lesson 4 a [direction], "de" [transpo	04 (10/25) Lesson 4 and 5: Verbs, Tense (non−past and past), Particle ″ni″ [time], ″kara [start], ″made″ [goal], ″e″ [direction], ″de″ [transportation], and ″to″ [cooperation]				
05 (11/01) Lesson 6 and	l 7; Particle ″o″ [object], ″de″ [p	lace][means], ″ni′	[goal][source]		
06 (11/08) Lesson 8: Ad	jectives, Lesson 9: Particle "ga"	[object]			
07 (11/15) Lesson 10: E	xistence, Lesson 11: Numerals ar	nd Counter suffixe	s		
08 (11/29) Lesson 12: P	08 (11/29) Lesson 12: Past tense of adjectives, Lesson 13: Adjectives of Desire				
09 (12/06) Lesson 14 an	09 (12/06) Lesson 14 and 15: Verb groups, "te"-form of verbs, and Sentences using "te"-form				
10 (12/13) Lesson 16: S	10 (12/13) Lesson 16: Sentences using "te"-form, Lesson 17: "nai"-form of verbs				
11 (01/10) Lesson 18: Dictionary form of verbs, Lesson 19: "ta"-form of verbs					
12 (01/17) Lesson 20: Polite and plain style, Lesson 21: Indirect speech					
13 (01/24) Lesson 22: Noun modification					
14 (01/31) Lesson 23: C	omplex sentence using "toki"[wł	nen], Lesson 25: C	onditional mood		
15 (02/14) Lesson 24: E	xchanging things or kindness				
16 (02/28) Final exam					
Self Preparation and Rev	iew				
Read the respective parts	s of the textbook in advance.				
Memorize the sentences	learned in every class meeting to	prepare for the r	next class's quiz.		

Related subjects

"Basic Grammar 1" of non-credit course "Basic Japanese" will cover Exercise A and B of the main textbook.

Textbook1	Book title	Minna no Niho Edition) Trans Romanized Vers	ongo (Elementary lation & Gramm sion	Japanese I, 2nd nar Notes-English,	ISBN	978-4- 88319-629-6
	Author		Publisher 3A Corporation			2013

Notes for textbook

Each lesson consists of 1)vocabulary, 2)translation of the main textbook, 3)useful words and information, and 4)grammar notes. 1)Vocabulary and 4)grammar notes only will be taught in the course.

Notes for reference

Goals to be achieved

At the end of this course students will be able

1) to know pronunciation of Japanese language.

- 2) to understand pronunciation and meaning of elementary Japanese vocabulary.
- 3) to grasp an overview of elementary Japanese grammar.

Evaluation of achievement

Grading Policy: Quizzes 30%, Final exam 70%

Evaluation Criteria: Students who meet required attendance will be evaluated as follows by the total points (out of 100 points) obtained from what shown above:

M1

S: 90 or higher A: between 80 and 89 B: between 70 and 79 C: between 60 and 69

M2

A: 80 or higher B: between 65 and 79

C: between 55 and 64

Examination

定期試験を実施(対面) Examination(Face to Face)

Details of examination

Decails of examination

Other information

When you contact by e-mail, write "I am (your name) of Principles of Japanese Grammar" as the subject . Reference URL

Office hours

Office Hour Friday 11:00-12:00 By appointment 08:30-12:00, 13:30-16:30 on weekday will be available.

Relations to attainment objectives of learning and education

電気・電子情報工学専攻 (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、自然と人間との共生、人類の幸福・健康・福祉について考える能力

Key words elementary Japanese, grammar

(M40030100)Japanese Industrial Technologies and Innovations[Japanese Industrial Technologies and Innovations]

Subject name[English]	Japanese Industrial Technologies and Innovations[Japanese Industrial Technologies and				
	Innovations]				
Schedule number	M40030100	Subject area	General	Required or	Elective
			courses	elective	
Time of starting a course	Fall term	Day of the	Intensive	Credit(s)	2
		week,period			
Faculty	Graduate Program for Master's Degree Subject grade 1				1~
Department Offered	Mechanical Engineering, Architecture and Civil Beggining M1				M1
	Engineering, Elec	Engineering, Electrical and Electronic Information			
	Engineering, Computer Science and Engineering,				
	Applied Chemistry and Life Science				
Charge teacher name[Roman	穗積 直裕, 梅村 恭司, 齊藤 大樹, 青野 雅樹, 井上 光輝, 石田 好輝, 高野 靖, 入山				
alphabet mark]	恭彦, 角田 正也, 小林 真一, 松本 雅行, 大和 真樹 HOZUMI Naohiro, UMEMURA Kyoji,				
	SAITOH Taiki, AONO Masaki, INOUE Mitsuteru, ISHIDA Yoshiteru, TAKANO Yasushi,				
	IRIYAMA Takahiko, KAKUTA Masaya, KOBAYASHI Shinichi, MATSUMOTO Masayuki, OHWA				
	Masaki				
Numbering	COM_MAS51025				

Objectives of class

In this series of lectures, the excellent experts of our university and Japanese leading companies from variety of fields in engineering impart to the engineering students knowledge of superior industry technologies in Japan. Students learn advantages and its contributing factors of Japanese industrial technologies.

* International students dispatched by JICA Development Studies Program (JICA-DSP) including ABE, Innovative Asia and PEACE in 2018 should take this subject as a compulsory course.

Contents of class

Each experts deliver lecture on specific industrial technology and its advantage from his reserch field. Some reserchers show difficulties and contributing factors of developing technologies through behind-the-scenes story. Some experts from manufacturing company show signature process how transform "technologies" to "industory or production" in Japanese companies.

1. Masaki Owa : Current Status and Hurdle of Pharmaceutical R&D in Japan

2~4 Taiki Saito : Earthquake and Tsunami Disaster Mitigation Techniques

5. Masaya Kakuta : Industrial technology from a design point of view

6. Masayuki Matsumoto : TBA

7. Yasushi Takano : Environmental noise of Railways

8. Masaki Owa : Innovation in Japanse Chemical Indutry 1 -Polymer Materials

9. Kyoji Umemura : TBA

10. Masaki Aono : An Introduction to Data Science and Deep Learning

11. Takahiko Iriyama : Importance of R&D in manufacturing companies-Case study ;Development of permanent magnets

12. Masaki Owa : Innovation in Japanse Chemical Indutry 2 -Electronic Materials

13. Mitsuteru Inoue : Magnetics and its electronic applications

14. Shinichi Kobayashi : TBA

15. Yoshiteru Ishida : Artificial Intelligence; pecent Trend and Future

Self Preparation and Review

Related subjects

Notes for textbook

Notes for reference

Goals to be achieved

1) To understand Japanese superior industrial technologies.

2) To concider contributing factors of creativity of industrial technologies in Japan showing specific technologies covered by lectures.

3) To analize advantages of application of science and technology on production process in Japanese manufacturing companies.

Evaluation of achievement

Evaluation method scoring will be processed 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 exanm and reports, 90 or high (out of 100 points)
A: Achieved all goals and obtained total points of examm and reports, 80 or nign (out of 100 points)
B: Achieved at least 05% of goals and obtained total points of examm and reports, 70 or high (out of 100 points)
C. Achieved at least 35% of goals and obtained total points of examm and reports, 60 or high (out of 100 points)
Examination
Dy Report
None during exam period
Reference URL
Office hours
Office hours After each class
Office hours After each class Relations to attainment objectives of learning and education
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Office hours After each class Relations to attainment objectives of learning and education 電気・電子情報工学専攻 (A)幅広い人間性と考え方 人間性と考え方 人間社会た地球的たねらから名声的によらえ、自然と人間との共生、人類の表征、健康・短兆について考える能力
Office hours After each class Relations to attainment objectives of learning and education 電気・電子情報工学専攻 (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、自然と人間との共生、人類の幸福・健康・福祉について考える能力
Office hours After each class Relations to attainment objectives of learning and education 電気・電子情報工学専攻 (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、自然と人間との共生、人類の幸福・健康・福祉について考える能力
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Office hours After each class Relations to attainment objectives of learning and education 電気・電子情報工学専攻 (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、自然と人間との共生、人類の幸福・健康・福祉について考える能力

Key words

industrial technology, develoment technology, application technology

(M40110020)Ethics for Researchers[Ethics for Researchers]

Subject name[English]	Ethics for Researc	Ethics for Researchers[Ethics for Researchers]				
Schedule number	M40110020	Subject area	General	Required or	Required	
			courses	elective		
Time of starting a course	Fall1 term	Day of the	Wed.1~1	Credit(s)	1	
		week,period				
Faculty	Graduate Program for Master's Degree			Subject grade	1~	
Department Offered	Mechanical Engi	Mechanical Engineering, Architecture and Civil			M1	
	Engineering, Electrical and Electronic Information			grade		
	Engineering, Con	Engineering, Computer Science and Engineering,				
	Applied Chemistry and Life Science					
Charge teacher name[Roman	教務委員会副委員長, 田中 三郎, 上野 未貴 kyoumu iinkai fukuiintyou, TANAKA S			TANAKA Saburo,		
alphabet mark]	UENO Miki					
Numbering	COM MAS51015					

Objectives of class

Assist graduate students as they undertake research activities and promote an understanding of the inherent ethical problems; lead students to think independently and exercise normative consciousness of research ethics through ethics education in research in accordance with goals of scientific education and research and characteristics of individual research specialties.

Contents of class

* 1st week(2018.10.17): Introduction, 1st module("Research Misconduct") in e-learning

* 2nd - 6th week(October 24 - November 21): 2nd - 6th modules in e-learning

- 2nd week: "Ethical Issues in the Management of Data in Engineering Research"

- 3rd week: "Responsible Authorship"

- 4th week: "Ethical Issues in the Peer Review and Publication of Engineering Research" & "Collaborative Research in Engineering Fields"

- 5th week: "Whistleblowing and the Obligation to Protect the Public"

- 6th week: "Managing Public Research Funds"

- * ~7th week(November 22 November 27): Discussion with supervisor
- * 8th week(November 28 2018) : make a final report

Self Preparation and Review

Students will need to refer to their textbook to prepare for and review each lesson.

Related subjects

Philosophy of Science and Technology, Ethics for Engineers

Notes for textbook

Notes for reference

For the Sound Development of Science ?The Attitude of a Conscientious Scientist Japan Society for the Promotion of Science Editing Committee , MARUZEN PUBLISHING

2015 ISBN978-4-621-08938-5

 $({\sf PDF:https://www.jsps.go.jp/j-kousei/data/rinri.pdf})$

Goals to be achieved

To prevent misconduct and promote fair research activities, this course provides knowledge and techniques regarding research ethics in accordance with characteristics of each graduate student's research specialties.

Evaluation of achievement

[Evaluation method] Final exam(100%)

[Evaluation basis]

Those who take and pass the short test after each unit of e-learning contents will be evaluated with following basis.

- S: Obtained total points of exam and reports, 90 or higher (out of 100 points).
- A: Obtained total points of exam and reports, 80 or higher (out of 100 points).
- B: Obtained total points of exam and reports, 70 or higher (out of 100 points).
- C: Obtained total points of exam and reports, 60 or higher (out of 100 points).

Examination		
レポートで実施		
By Report		
Details of examination		
By report		

Other information

Reference URL

Office hours

Relations to attainment objectives of learning and education

電気・電子情報工学専攻 (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、自然と人間との共生、人類の幸福・健康・福祉について考える能力 (B)技術者としての正しい倫理観と社会性 技術者としての専門的・倫理的責任を自覚し、社会における技術的課題を設定・解決・評価する能力

Key words

Research Ethics, Conflict of Interest, Legal Compliance, Research Misconduct, Confidentiality Obligation, Security Export Control Policy, Copyright, Professionalism

(M41610010)Seminar on Mechanical Engineering I[Seminar on Mechanical Engineering I]

Subject name[English]	Seminar on Mech	anical Engineering I	Seminar on Mech	anical Engineering I]	
Schedule number	M41610010	Subject area	Advanced	Required or	Required
		Calgoot a ca	Mechanical	elective	. loquin ou
			Engineering	ciccure	
Time of starting a course	Vear	Day of the	Intensive	Credit(e)	4
Time of starting a course	i cai	weak period	Incensive	Olegic(s)	7
Faculty	Cuaduata Duamuan	week,period		Subject mede	1
	Graduate Program	i for Master's Degre	e	Subject grade	~ ↓
Department Offered	Mechanical Engin	eering		Beggining	
	o1.5 批 改 千 日 1			grade	
Charge teacher name_Roman	S1糸教務安員1	kei kyomu lin−S			
alphabet mark					
Numbering	MEC_MAS51015				
Objectives of class					
The seminar aims to provide a br	oad understanding	of the mechanical e	ngineering availab	le for the master the	esis research of a
student.					
Contents of class					
The class provides both of fund	amental knowledge	of his/her master t	hesis research w	ork and the most ad	vanced results in
the related field by reading rese	arch papers and r	nonographs. The co	ontents of the old	iss depend on the s	supervisor. To be
announced by individual supervise	ors.				
Self Prenaration and Review					
Related subjects					
Notes for textbook					
Taythack or material will be made	available from the				
Textbook of material will be made	e available from the	supervisors.			
Notes for reference					
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 presenta	tion skill.	
		•	•		
Evolution of achievement					
Coursework, presentation and/or	report.				
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					
B 1 1 1 1 1 1 1 1 1	<u> </u>				
Relations to attainment objective	es of learning and e	aucation			
Key words	Key words				

(M41610020)Seminar on Mechanical Engineering II[Seminar on Mechanical Engineering II]

Subject name[English]	Seminar on Mech	anical Engineering II	Seminar on Mech	anical Engineering II	
Schedule number	M41610020	Subject area	Advanced	Required or	Required
			Mechanical	elective	Roquirou
			Engineering	ciccure	
Time of starting a course	Year	Dav of the	Intensive	Credit(s)	2
		week.period			
Faculty	Graduate Program	n for Master's Degre	e	Subject grade	2~
Department Offered	Mechanical Engine	eering		Beggining	M2
				grade	
Charge teacher name[Roman	S1系教務委員 1	kei kyomu Iin−S			
alphabet mark]					
Numbering	MEC_MAS61015				
Objectives of class					
The seminar aims to provide a br	oad understanding	of the mechanical e	ngineering available	e for the master the	sis research of a
student.					
Contents of class					
The class provides both of funda	mental knowledge	of his/her master t	hesis research wo	rk and the most ad	vanced results in
the related field by reading rese	arch papers and n	nonographs. The co	ontents of the clas	ss depend on the s	upervisor. To be
announced by individual supervise	ors.				
Self Preparation and Review					
Related subjects					
Notes for textbook					
Textbook or material will be made	available from the	supervisors.			
Notes for reference					
Goals to be achieved					
To acquire fundamental knowledg	e of individual resea	arch fields.			
To acquire the ability to find prob	lems, the ability to	solve the problems,	and the presentat	ion skill.	
Evaluation of achievement					
Coursework, presentation and/or	report.				
Examination					
試験期間中には何も行わない					
None during exam period					
Details of examination					
Other information	Other information				
Reference URL					
Office hours					
Relations to attainment objective	s of learning and e	ducation			
Key words					

M41610030)Thesis Research on	Mechanical Engineering	Thesis Research on	Mechanical Engineering
	MOUTAINOAL LIGHTOUTING		

Subject name[English]	Thesis Research	on Mechanical Engi	peering[Thesis Res	earch on Mechanica	Engineering]
Schedule number	M41610030	Subject area	Advanced	Required or	Required
			Mechanical	elective	
			Engineering	0.000.00	
Time of starting a course	2Years	Dav of the	Intensive	Credit(s)	6
		week.period			
Faculty	Graduate Program	n for Master's Degre	ee	Subject grade	1~1
Department Offered	Mechanical Engin	eering		Beggining	M1, M2
				grade	
Charge teacher name[Roman	S1系教務委員,	I系各教員 1kei kyoi	mu Iin−S, 1kei kaku	kyouin	
alphabet mark]					
Numbering	MEC_MAS61015				
Objectives of class					
The thesis research aims to pro	ovide a practical e	experience of resea	rch work, and to	acquire research s	kills with a deep
understanding of relevant knowled	dge.				
Contents of class					
The research subject depends	on the supervisor	and the research	group you join. In	dividual students w	ill have different
research subjects. Discuss with v	our supervisor.				
Self Preparation and Review	-				
Related subjects					
Notes for toytheak					
Notes for reference	allable from the sup	bervisor.			
Notes for reference					
Gasla to be ashieved					
To get comething new on individu	al raccarab fieldo				
To get something new on individu	al research heius.	d procentation skills			
Evaluation of achievement	iciuding planning an	a presentation skills	ö.		
F •					
試験期间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 objective	s of learning and e	ducation			
1					
Key words					

M41610030)Thesis Research on	Mechanical Engineering	Thesis Research on	Mechanical Engineering
	MOUTAINOAL LIGHTOUTING		

Subject nome[English]	Thesis Desseyab	on Machanical Engin	a anime Theasia Dag	aanah an Maahaniaa	I En erin e evin el
	MA1610020	Subject and Engin	Advanced		
Schequie numder	10141010030	Subject area	Machaniced	required or	Required
				818CUV8	
Time of starting a service	2Vears	Day of the	Intensivo	Credit(-)	6
nme of starting a course	2 Tears	weak period	Intensive	Great(S)	U
Faculty	Graduate Program	n for Master's Degre		Subject grade	1~1
Department Offered	Mechanical Engine	eering		Beggining	M1 M2
		001115		grade	
Charge teacher name[Roman	S1系教務委員 1	1系各教員 1kei kvor	nu Iin-S. 1kei kaku	ikvouin	1
alphabet mark]			,e		
Numbering	MEC MAS61015				
Objectives of class	-				
The thesis research aims to pro- understanding of relevant knowled	ovide a practical e dge.	experience of resea	rch work, and to	acquire research s	kills with a deep
Contents of class					
The research subject depends	on the supervisor	and the research	group you join. In	dividual students w	ill have different
research subjects. Discuss with y	our supervisor.				
Self Preparation and Review					
Related subjects					
Notes for textbook					
Reference and material will be av	ailable from the sup	pervisor.			
Notes for reference					
Goals to be achieved					
To get something new on individu	al research fields.				
To develop your research skills in	cluding planning an	d presentation skills	5.		
Evaluation of achievement					
Examination					
None during exam period	יאראדינוס באסרייני באסרייניס באסרייניס באסרייניס exam period				
Details of examination					
Other information					
Reference URL					
Office hours					
Relations to attainment objective	s of learning and e	ducation			
	· · · · · · · · · · · · · · · · · · ·				
Key words					

(M4161003T)Thesis Research on Mechanical Engineering[Thesis Research on Mechanical Engineering]

Subject name[English]	Thesis Research	on Mechanical Engi	neering[Thesis Res	search on Mechanica	l Engineering]
Schedule number	M4161003T	Subject area	Advanced	Required or	Required
		-	Mechanical	elective	
			Engineering		
Time of starting a course	Year	Day of the	Intensive	Credit(s)	6
		week,period			
Faculty	Graduate Progran	n for Master's Degre	e	Subject grade	2~2
Department Offered	Mechanical Engin	eering		Beggining	M1, M2
Charge teacher name[Roman	S1系教務委員	1 系各教員 1kei kvo	mu lin–S. 1 kei kakı	Ikvouin	
alphabet mark]	01 永秋初安員,			akyoun	
Numbering	MEC_MAS61015				
Objectives of class					
The thesis research aims to pr	ovide a practical e	experience of resea	rch work. and to	acquire research s	kills with a deep
understanding of relevant knowle	dge.	···			
-					
Contents of class					
The research subject depends	on the supervisor	and the research	group you join. Ir	ndividual students w	ill have different
research subjects. Discuss with y	our supervisor.		-		
Self Preparation and Review					
Related subjects					
Notes for textbook					
Reference and material will be av	ailable from the su	pervisor.			
Notes for reference	•				
Goals to be achieved					
To get something new on individu	al research fields.				
To develop your research skills in	cluding planning an	d presentation skills	S.		
Evaluation of achievement	01 0	•			
Examination					
試験期間中には何も行わない					
None during exam period					
Details of examination					
Other information					
Reference URI					
Office hours					
Office nours					
Deletione to attainment all at					
Relations to attainment objective	s of learning and e	aucation			
Kev words					
,					

(M41610040)Seminar on Mechanical Engineering[Seminar on Mechanical Engineering]

Subject name[English]	Seminar on Mec	hanical Engineering[S	Seminar on Mechan	ical Engineering]		
Schedule number	M41610040	Subject area	Advanced	Required or	Required	
			Mechanical	elective		
			Engineering			
Time of starting a course	Year	Day of the week.period	Intensive	Credit(s)	6	
Faculty	Graduate Progra	m for Master's Degre	e	Subject grade	2~	
Department Offered	Mechanical Engi	neering		Beggining	M1	
				grade		
Charge teacher name[Roman	S1系教務委員	1kei kyomu Iin-S				
alphabet mark]						
Numbering	MEC_MAS51015					
Objectives of class						
The seminar aims to provide a br	oad understanding	; of the mechanical e	ngineering available	e for the master the	esis research of a	
student.						
Contents of class						
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	monographs. The co	ontents of the clas	ss depend on the s	supervisor. To be	
announced by individual supervise	ors.					
Self Preparation and Review						
Related subjects						
Notes for textbook						
Textbook or material will be made	e available from the	e supervisors.				
Notes for reference						
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 presentat	ion skill.		
Evaluation of achievement						
Coursework, presentation and/or	report.					
Examination						
試験期間中には何も行わない	試験期間中には何も行わない					
None during exam period						
Details of examination						
Other information						
Reference URL						
077						
Uffice hours						
Relations to attainment objective	s of learning and o	education				
Key words						

(M41610050)Internship[Internship]

Subject name[English]	Internship[Interns	hip]					
Schedule number	M41610050	Subject area	Advanced	Required or	Required		
			Mechanical	elective	-		
			Engineering				
Time of starting a course	Fall term	Day of the	Intensive	Credit(s)	0		
_		week,period					
Faculty	Graduate Program	n for Master's Degre	e	Subject grade	2~		
Department Offered	Mechanical Engin	eering		Beggining	M1		
		grade					
Charge teacher name[Roman	S1系教務委員 1	\$1系教務委員 1kei kyomu lin−S					
alphabet mark]							
Numbering	MEC_MAS51015	IEC_MAS51015					
Objectives of class							
Students are expected to addres	ss problems in a s	pecialized field in a	company or resear	rch institute. The o	objectives of this		
subject are to experience practi	cal research and d	evelopment and to	cultivate the practi	cal problem-solvin	g ability, planning		
ability, and creativity.			-				
Contents of class							
In order to cultivate the practical	problem-solving al	bility. academic and	company/institutio	nal supervisors will	provide practical		
problems in a specialized field thr	ough close commu	nication.		·			
Self Preparation and Review							
Studens are expected to discuss	a preferable inters	hip topic with super	visors before startir	nø it.			
Related subjects				·S ·C.			
Notes for textbook							
Follow instructions provided by c	ompany/institutiona	al supervisors.					
Notes for reference							
Goals to be achieved							
While engaging practical activities	s in a company or	research institution	for several months	. students are exp	ected to improve		
the practical problem-solving abil	ity, planning ability,	and creativity as we	ell as an internation	al way of thinking.			
Evaluation of achievement		-					
Comprehensive evaluation base	d on students' r	eports and evaluat	tion sheets by ac	ademic and com	pany/institutional		
supervisors.		•	,				
A: 80 or higher (out of 100 points), B: 65 or higher (o	out of 100 points) C:	55 or higher (out o	f 100 points)			
	. .	•		•			
Eveminetion							
武殿労间中には同つ111/20							
None during examination							
Other information							
Reference URL							
Office hours							
Relations to attainment objective	s of learning and e	ducation					
Key words							

(M41630210)Advanced Mechanical Systems Design I[Advanced Mechanical Systems Design I]

Subject name[English]	Advanced Mecha	nical Systems Desig	n I[Advanced Med	hanical Systems Des	sign I]
Schedule number	M41630210	Subject area	Advanced	Required or	Elective
			Mechanical	elective	
			Engineering		
Time of starting a course	Fall term	Day of the	Mon 4~4	Gredit(s)	2
		week period			-
Feauthy	Graduata Program	n for Master's Degre	2	Subject grade	1~
Department Offered	Machanical Engin	a aring		Degrining	M1
Department Onered		eening		Deggining	
Charma tasahar nama[Barran	01	kai kuannu lin-S		grade	
	31 术权伤安良 1	kei kyömu im-3			
Numbering	WEC_WAS55025				
Objectives of class					
This lecture aims to provide a br	oad understanding	of the mechanical s	ystems design av	ailable for the maste	r thesis research
work of a student.					
Contents of class					
The class provides both of funda	amental knowledge	of his/her master t	hesis research wo	ork and the most ad	vanced results in
the related field by reading rese	arch papers and n	nonographs. The co	ntents of the cla	iss depend on the s	upervisor. To be
announced by individual supervise	ors.				
Self Preparation and Review					
· · · · · ·					
Balatad aukia ata					
Related subjects					
Notes for textbook					
Textbook or material will be made	e available from the	supervisors.			
Notes for reference					
Goals to be achieved					
To acquire fundamental knowledg	e of individual rese	arch fields			
To acquire the ability to find prob	leme the ability to	colve the problems	and the precentat	ion skill	
To acquire the ability to find prob	iems, the ability to	solve the problems	and the presentat	IOT SKIII.	
Evaluation of achievement					
Coursework, presentation and/or	report.				
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					
Deletione to etteinment chiestin		d			
Relations to attainment objective	s or learning and e	aucation			
Key words					

Schedule number M4163 Time of starting a course Fall te Faculty Gradu Department Offered Mecha Charge teacher name[Roman alphabet mark] S1系: Numbering MEC_N Objectives of class This lecture aims to provide a broad und research work of a student. Contents of class The class provides both of fundamental the related field by reading research pa announced by individual supervisors. Self Preparation and Review Related subjects Notes for textbook Textbook or material will be made availab Notes for textbook Textbook or material will be made availab Notes for reference Goals to be achieved To acquire fundamental knowledge of indi To acquire the ability to find problems, th Evaluation of achievement Coursework, presentation and/or report. 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	D230 rm I ate Program f nical Engineer 政務委員 1kei IAS54025 erstanding of cnowledge of pers and mor	Subject Day of week,pe for Mast ering ei kyomu f the mat f the mat	area of riod er's I Iin-S cerial: * mas s. Th	the Degree S S S ster the co	Advanced Mechanical Engineering Tue.4~4 e manufacturing pr mesis research wo ntents of the cla	Required or elective or elective Credit(s) Subject grade Beggining grade Bergining grade roccess available for t Subject grade ork and the most address depend on the set State of the set	Elective 2 1~ M1 the master thes
Time of starting a course Fall te Faculty Gradu Department Offered Mecha Charge teacher name[Roman alphabet mark] S1系: Numbering MEC_N Objectives of class This lecture aims to provide a broad und research work of a student. Contents of class This lecture aims to provide a broad und research work of a student. Contents of class The class provides both of fundamental the related field by reading research pa announced by individual supervisors. Self Preparation and Review Related subjects Notes for textbook Textbook or material will be made availab Notes for reference Goals to be achieved To acquire fundamental knowledge of indi To acquire the ability to find problems, th Evaluation of achievement Coursework, presentation and/or report. 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 Office hours	rm I ate Program f nical Engineer 救務委員 1kei 1AS54025 erstanding of <nowledge of<br="">pers and mor</nowledge>	Day of week,pe for Mast ering ei kyomu f the mat f his/her pnograph	of riod er's [Iin−S cerial: mas s. Th	the Degre S Is and ster the	Tue.4~4 e manufacturing pr nesis research wo ntents of the cla	Credit(s) Subject grade Beggining grade rocess available for t ork and the most add ss depend on the s	2 1~ M1 the master thes
Faculty Gradu Department Offered Mecha Charge teacher name[Roman alphabet mark] S1系: Numbering MEC_N Objectives of class MEC_N This lecture aims to provide a broad und research work of a student. Contents of class The class provides both of fundamental the related field by reading research pa announced by individual supervisors. Self Preparation and Review Related subjects Notes for textbook Textbook or material will be made availab Notes for textbook Textbook or material will be made availab Notes for reference Goals to be achieved To acquire fundamental knowledge of indi To acquire the ability to find problems, th Evaluation of achievement Coursework, presentation and/or report. 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	ate Program f nical Enginee 收務委員 1kei IAS54025 erstanding of knowledge of pers and mor	for Mast ering ei kyomu f the mat f his/her pnograph	er's I Iin-S cerials * mas s. Th	Degre S Is and ster the co	e manufacturing pr nesis research wo ntents of the cla	Subject grade Beggining grade	1~ M1 the master thes
Charge teacher name[Roman alphabet mark] S1系: alphabet mark] MEC_N Numbering MEC_N Objectives of class This lecture aims to provide a broad und research work of a student. Contents of class This lecture aims to provide a broad und research work of a student. Contents of class The class provides both of fundamental the related field by reading research pa announced by individual supervisors. Self Preparation and Review Related subjects Notes for textbook Textbook or material will be made availab Notes for reference Goals to be achieved To acquire fundamental knowledge of indi To acquire the ability to find problems, th Evaluation of achievement Coursework, presentation and/or report. 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 Office hours	教務委員 1kei IAS54025 erstanding of knowledge of pers and mor	ei kyomu f the mat f his/her onograph	Iin−S terial mas s. Th	S Is and ster the co	manufacturing pr nesis research wo ntents of the cla	rocess available for t ork and the most ad ss depend on the s	he master thes
Numbering MEC_N Objectives of class This lecture aims to provide a broad und research work of a student. Contents of class The class provides both of fundamental the related field by reading research pa announced by individual supervisors. Self Preparation and Review Related subjects Notes for textbook Textbook or material will be made availab Notes for reference Goals to be achieved To acquire fundamental knowledge of indi To acquire the ability to find problems, th Evaluation of achievement Coursework, presentation and/or report. Examination Stits phill 中には何も行わない None during exam period Details of examination Other information Reference URL Office hours	IAS54025 erstanding of knowledge of pers and mor	f the mat f his/her onograph	terial mas s. Th	ls and ster th	manufacturing pr nesis research wo ntents of the cla	rocess available for t ork and the most ad ss depend on the s	he master thes
Objectives of class This lecture aims to provide a broad und research work of a student. Contents of class The class provides both of fundamental the related field by reading research pa announced by individual supervisors. Self Preparation and Review Related subjects Notes for textbook Textbook or material will be made availab Notes for reference Goals to be achieved To acquire fundamental knowledge of indi To acquire the ability to find problems, th Evaluation of achievement Coursework, presentation and/or report. 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	erstanding of knowledge of pers and mor	f the mat f his/her pnograph	mas s. Th	ls and ster the co	manufacturing pr nesis research wo ntents of the cla	rocess available for t ork and the most ad ss depend on the s	the master thes
the related field by reading research pa announced by individual supervisors. Self Preparation and Review Related subjects Notes for textbook Textbook or material will be made availab Notes for reference Goals to be achieved To acquire fundamental knowledge of indi To acquire fundamental knowledge of indi To acquire the ability to find problems, th Evaluation of achievement Coursework, presentation and/or report. 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	pers and moi	onograph	s. Th	he co	ntents of the cla	ss depend on the s	
announced by individual supervisors. Self Preparation and Review Related subjects Notes for textbook Textbook or material will be made availab Notes for reference Goals to be achieved To acquire fundamental knowledge of indi To acquire the ability to find problems, th Evaluation of achievement Coursework, presentation and/or report. 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							upervisor. To l
Self Preparation and Review Related subjects Notes for textbook Textbook or material will be made availab Notes for reference Goals to be achieved To acquire fundamental knowledge of indi To acquire the ability to find problems, th Evaluation of achievement Coursework, presentation and/or report. 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							
Related subjects Notes for textbook Textbook or material will be made availab Notes for reference Goals to be achieved To acquire fundamental knowledge of indi To acquire the ability to find problems, th Evaluation of achievement Coursework, presentation and/or report. Examination 武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							
Notes for textbook Textbook or material will be made availab Notes for reference Goals to be achieved To acquire fundamental knowledge of indi To acquire the ability to find problems, th Evaluation of achievement Coursework, presentation and/or report. 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							
To acquire the ability to find problems, th Evaluation of achievement Coursework, presentation and/or report. 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	e from the su	ch fields	<u>rs.</u>			·	
Evaluation of achievement Coursework, presentation and/or report. 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			propi			ION SKIII.	
Coursework, presentation and/or report. 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							
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							
AND							
Other information Reference URL Office hours							
Other information Reference URL Office hours							
Reference URL Office hours							
Office hours							
Relations to attainment objectives of lea	ning and edu	ucation					
Key words							

(M41630250)Advanced System, Control and Robotics I[Advanced System, Control and Robotics I]

Subject name[English]	Advanced System	. Control and Robot	tics I[Advanced Svs	tem. Control and R	obotics []
Schedule number	M41630250	Subject area	Advanced	Required or	Flective
	1111000200	Cubject al ca	Mechanical	elective	LICOLIVE
			Engineering	01000140	
Time of starting a source	Eall tarms	Davi of the	Wed 2 - 2	One dit(a)	0
lime of starting a course	Fall term	Day of the	wea.3~3	Great(s)	2
		week,period			
Faculty	Graduate Program	n for Master's Degre	e	Subject grade	1~
Department Offered	Mechanical Engine	eering		Beggining	M1
				grade	
Charge teacher name[Roman	S1系教務委員 1	kei kyomu Iin−S			
alphabet mark]					
Numbering	MEC_MAS55025				
Objectives of class					
This lecture aims to provide a bro	and understanding o	of the control and re	botios available for	the master thesis	recearch work of
This lecture aims to provide a bro	Sau understanding d		DUCIUS 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 t	hesis research wor	k and the most ad	vanced results in
the related field by reading rese	earch papers and m	nonographs. The co	ntents of the clas	s depend on the s	upervisor. To be
announced by individual superviso	ors.				
Self Preparation and Review					
-					
Palatad aubiaata					
Related subjects					
Notes for textbook					
Textbook or material will be made	available from the	supervisors.			
Notes for reference		· ·			
Goals to be achieved					
I o acquire fundamental knowledg	e of individual resea	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				
Examination					
試験期間内には何も行わたい					
武殿労町中によ问む1117ない Name during even period					
None during example to a					
Details of examination					
Other information					
Deference LIDI					
Office hours					
Relations to attainment objective	s of learning and a	ducation			
		44 44WVI I			
Key words					

(M41630270)Advanced Energy an	d Environmental En	gineering I[A	dvance	d Energy and Env	ironmental Enginee	ring []
Subject name[English]	Advanced Energy Engineering I]	and Enviro	nmenta	al Engineering I[A	dvanced Energy a	nd Environmental
Schedule number	M41630270	Subject are	a	Advanced Mechanical	Required or elective	Elective
Time of starting a course	Fall term	Day of week.period	the	Wed.5~5	Credit(s)	2
Faculty	Graduate Program	for Master's	Degre	e	Subject grade	1~
Department Offered	Mechanical Engine	ering	8	-	Beggining grade	M1
Charge teacher name[Roman alphabet mark]	S1系教務委員 1k	kei kyomu Iin-	-S			1
Numbering	MEC_MAS56025					
Objectives of class This lecture aims to provide a bro- research work of a student. Contents of class	oad understanding o	f the energy	and er	ivironmental engin	eering available for	the master thesis
The class provides both of funda the related field by reading rese announced by individual superviso	mental knowledge o arch papers and m ors.	of his/her ma ionographs.]	ister t The co	hesis research wo ntents of the clas	rk and the most ad ss depend on the s	supervisor. To be
Self Preparation and Review						
Related subjects						
Notes for textbook Textbook or material will be made Notes for reference	available from the s	supervisors.				
Goals to be achieved						
To acquire fundamental knowledg To acquire the ability to find prob	e of individual resea lems, the ability to s	rch fields. solve the pro	blems,	and the presentat	ion skill.	
Evaluation of achievement						
Coursework, presentation and/or	report.					
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 objective	s of learning and ed	lucation				
Key words						

(M41630290)Advanced Aeroacoustics[Advanced Aeroacoustics]

Subject neme[English]		e e uetice [A due ne e d	A avecas a sustiana]		
	Muteonon	Subject area		Poguinad	Fleeting
Schedule number	10141030290	Subject area	Mashaviaal	Required or	Elective
				elective	
Time of starting a source	Fall1 torm	Day of the		Credit(a)	1
Time of starting a course	Failt term	Day of the	Tue.z. • z	Great(s)	•
Feaulty	Graduate Progra	m for Master's Degr		Subject grade	1~
Department Offered	Mechanical Engi	neering	66	Bergining	M1
	Meenanioar Engi	licening		grade	
Charge teacher name[Roman	飯田 明由 1104	Akiyoshi		Biado	
alphabet mark]		/ wyoon			
Numbering	MEC MAS56025				
	11120_111/1000020				
To get basis knowledge of seres	ocuption and naion	reduction technique	for oarodynamia		
To get basic knowledge of aeroa	coustics and noise	reduction technique	for aerodynamic r	ioise.	
Contents of close	soustics and noise	reduction technique	for aerouynamic r	IOISE.	
Design the same of the flow induce					
Basic theory of the flow induce	a noise will be lec	tured, and experime	ental and numerica	al technique for aero	acoustics will be
received.					
1. Principle of sound and noise(1)				
2. Principle of sound and noise(2)				
3. Lighthill Theory					
4. Curle's Theory					
5. Theory of vortex sound					
6. Prediction of aerodynamic sou	nd from a bluff boo	dy			
7. Identification method of aerod	ynamic noise sourc	ce			
8. Measurement technique for ae	rodynamic sound				
Basic theory of the flow induce	d noise will be lec	tured, and experime	ental and numerica	al technique for aero	acoustics will be
received.					
1. Principle of sound and noise(1)				
2. Principle of sound and noise(2)				
3. Lighthill Theory					
4. Curle's Theory					
5. Theory of vortex sound					
6. Prediction of aerodynamic sou	nd from a bluff boo	dy			
7. Identification method of aerod	ynamic noise sourc	ce			
8. Measurement technique for ac	rodynamic sound				
Self Preparation and Review					
Please read handouts before the	lecture.				
Please read your notes again for	review of lecture.				
Please read handouts before the	lecture.				
Please read your notes again for	review of lecture.				
Related subjects					
- Fluid dynamics					
Fluid dynamics					
Notes for textbook					
No Textbook is required					
-					
No Textbook is required					
Notoo for reference					
NOTES TOP REFERENCE					
Goals to be achieved					
To understand the generation me	echanism of aeroad	lynamic noise.			

To understand the principle of Lighthill Theory.
To understand the generation mechanism of aeroadynamic noise.
To understand the principle of Lighthill Theory.
Evaluation of achievement
Report 100 %
Report 100 %
Examination
レポートで実施
By Report
Details of examination
Other information
room D-410
e-mail:iida@mech.tut.ac.jp
room D-410
e-mail:iida@mech.tut.ac.jp
Reference URL
http://aero.me.tut.ac.jp
http://aero.me.tut.ac.jp
Office hours
Monday 13:00-15:00
Monday 13:00-15:00
Relations to attainment objectives of learning and education
Key words
Aeroacousitcs, Turbulence, Sound Wave
Aeroacousitcs, Turbulence, Sound Wave

(M41630330)Advances in Mechanical Design[Advances in Mechanical Design]

Subject name[English]	Advances in Mechanical Design[Advances in Mechanical Design]						
Schedule number	M41630330	Subject area	Advanced	Required or	Elective		
			Mechanical	elective			
			Engineering				
Time of starting a course	Year	Day of the	Tue.1~1	Credit(s)	2		
		week,period					
Faculty	Graduate Program	n for Master's Degre	e	Subject grade	2~		
Department Offered	Mechanical Engineering			Beggining	M1		
			grade				
Charge teacher name[Roman	森 謙一郎, 足立 忠晴 MORI Ken-Ichiro, ADACHI Tadaharu						
alphabet mark]							
Numbering	MEC_MAS53015						

Objectives of class

This class is separated into two parts:

Prof. Mori

With the recent development of computers, numerical methods tend to be used in the field of manufacturing processes. The finite element method is mainly explained in this lecture. The finite element method is widely applied to engineering problems such as solid mechanics, fluid mechanics, etc.

Prof. Adachi

To understand mechanical performances of structures, and mechanical behaviors of solid and structures, fundamental mechanics of solid and structure is lectured. Especially, mechanics of thin-walled structures which is useful for practical design of mechanical structures is explained in detail.

Contents of class

Prof. Mori

1st week: Numerical Methods: finite difference method, finite element method and boundary element method

2nd week: Finite difference method for heat conduction: discretizaton of differential equation governing heat conduction, calculation of temperature distribution

3rd week: Basic equations in solid mechanics: three-dimensional stress and strain, equilibrium equations, constitutive equations in elasticity and plasticity, yield criteria, incompressibility condition, etc.

4th week: Finite element method for elastic deformation: triangular elements, distributions of displacement and strain

5th week: Equilibrium equations of nodal forces, stiffness matrix,

6th week: Treatment of boundary conditions

7th week: Plasticity, elastic-plastic finite element method

8th week: Summary

Prof. Adachi Chapter 1. Introduction Chapter 2. Automobile Structures from View of Solid Mechanics Purpose of automobile structure, Loading to automobile structure Deformation of automobile structure, Performance of automobile structure Chapter 3. Fundamentals of Structural Mechanics Fundamental equations in solid mechanics Chapter 4. Forces and Moments Applying to Structures Normal force, shear force, bending moment, torsional moment Chapter 5. Elementary Mechanics of Structures Torsion and bending of thin-walled beams Chapter 6. Mechanics of Thin-Walled Structures #1 Torsion and bending of thin-walled beams Chapter 7. Mechanics of Thin-Walled Structures #2

Torsion and bending of thin-walled beams

Chapter 8. Summary

Self Preparation and Review

The knowledge about the strength of materials is required.

Related subjects

Mechanics of Materials, Elasticity, Solid Mechanics
Notes for textbook
Part 1 (Prof. Mori): handout
Text for Part (2) (Prof Adachi) will be distributed on the web site. The details of the text will be given in the first class
Notes for reference
Gaals to be aphieved
To understand the finite element method
Davit (2) (Duraf Adaphi)
Fart (2) (FTO). Audenii)
To develop involve a meaning fundamental equations in some mechanics.
To deeply understand elementary mechanics of materials (strength of materials), tension of bar, torsion of axis and bending of
Deam.
Founderstand mechanics of triin-walled structures.
Dart 1 (Drof Mari): Penarts of eveny week
Part I (Froi. Worl). Reports of every week
Part 2 (Prof. Adachi). Examinations, 80% and attendances, 20%
S: Achieved 90% of goals or higher (out of 100 points).
A: Achieved 80% of goals or higher (out of 100 points).
B: Achieved /0% of goals or higher (out of 100 points).
C: Achieved 60% of goals or higher (out of 100 points).
M2
A: Achieved 80% of goals or higher (out of 100 points).
B: Achieved 65% of goals or higher (out of 100 points).
C: Achieved 55% of goals or higher (out of 100 points).
Examination
By Report
Details of examination
Other information
Prof. Mori: room number: D-606, extension number: 6707
Prof. Adachi: Room D-305, Extension phone 6664, Email adachi@me.tut.ac.jp
Part(1) (Prof. Mori) http://plast.me.tut.ac.jp/index.eng.html
Part(2) (Prof. Adachi) http://solid.me.tut.ac.jp/solid/
Anytime. Contact me by email before coming it possible.
Relations to attainment objectives of learning and education
Key words

Strength of materials, Mechanics of materials, solid mechanics, Structural mechanics, Thin-walled Structure, Numerical methods, Forming processes

(M41630350)Advances in Thermal and Fluid Mechanics[Advances in Thermal and Fluid Mechanics]

Subject name[English]	Advances in The	ermal and Fluid Mech	anics[Advances in T	hermal and Fluid N	lechanics]					
Schedule number	M41630350	Subject area	Advanced	Required or	Elective					
			Mechanical	elective						
			Engineering							
Time of starting a course	Fall term	Day of the	Mon.3 ~ 3,Tue.2	Credit(s)	2					
-		week,period	~2							
Faculty	Graduate Progra	am for Master's Degre	Subject grade	2~						
Department Offered	Mechanical Engi	neering		Beggining	M1					
				grade						
Charge teacher name[Roman	中村 祐二,飯日	中村 祐二, 飯田 明由 NAKAMURA Yuji, IIDA Akiyoshi								
alphabet mark]										
Numbering	MEC_MAS56025									
Objectives of class										
To get basic knowledge of aeroad	oustics and noise	reduction technique	for aerodynamic no	ise.						
To get basic knowledge of aeroad	oustics and noise	reduction technique	for aerodynamic no	ise.						
Contents of class										
Basic theory of the flow induced	l noise will be lec	tured, and experime	ntal and numerical	technique for aero	acoustics will be					
received.										
1. Principle of sound and noise(1)										
2. Principle of sound and noise(2)										
3. Lighthill Theory										
4. Curle's Theory										
5. Theory of vortex sound										
6. Prediction of aerodynamic sour	nd from a bluff boo	dy								
7. Identification method of aerody	namic noise sourc	ce								
8. Measurement technique for ae	rodynamic sound									
Basic theory of the flow induced	l noise will be lec	tured, and experime	ntal and numerical	technique for aero	acoustics will be					
received.										
1. Principle of sound and noise(1)										
2. Principle of sound and noise(2)										
3. Lighthill Theory										
4. Curle's Theory										
5. Theory of vortex sound										
6. Prediction of aerodynamic sour	nd from a bluff boo	dy								
7. Identification method of aerody	namic noise sourc	ce								
8. Measurement technique for ae	rodynamic sound									
Self Preparation and Review										
Please read handouts before the	lecture.									
Please read your notes again for	review of lecture.									
Please read handouts before the	iecture.									
Please read your notes again for	review of lecture.									
Fluid dynamics										
Fluid dynamics										
Notes for textbook										
No Textbook is required										
No Textbook is required										
no rexubook is required										
Notes for reference										
Goals to be achieved										
To understand the generation me	chanism of aeroad	dynamic noise.								

To understand the principle of Lighthill Theory.
To understand the generation mechanism of aeroadynamic noise.
To understand the principle of Lighthill Theory.
Evaluation of achievement
Report 100 %
Report 100 %
Examination
レポートで実施
By Report
Details of examination
Other information
room D-410
e-mail:iida@mech.tut.ac.jp
room D-410
e-mail:iida@mech.tut.ac.jp
Reference URL
http://aero.me.tut.ac.jp
http://aero.me.tut.ac.jp
Office hours
Monday 13:00-15:00
Monday 13:00-15:00
Relations to attainment objectives of learning and education
Key words
Aeroacousitcs, Turbulence, Sound Wave
Aeroacousitcs, Turbulence, Sound Wave

(M41630380)Robotics[Robotics]

Subject	Robotics[Ro	potics]							
name[English]			I						
Schedule number	M41630380		Subject area	Advanced Mechanical Engineering	Required or elective	Elective			
Time of starting a course	Fall term		Day of the week.period	Wed.4~4	Credit(s)	2			
Faculty	Graduate Pro	ogram for Master's Deg	Subject grade	2~					
Department Offered	Mechanical E	Beggining grade	M1						
Charge teacher	内山 直樹し	内山 直樹 UCHIYAMA Naoki							
name[Roman alphabet									
mark]									
Numbering	MEC_MAS55	025							
Objectives of class									
Provides fundamentals	of robotics; ki	nematics, dynamics an	d motion control	of multiple rigid-bo	dies connected	in series with			
revolute or prismatic joi	nts.								
Contents of class									
1. Representation and t	ransformation	of positions and orient	ations in 3-D spa	ce					
1–1. Description of posi	tions and orier	tations in 3-D space.							
1–2. Transformation of I	positions and c	rientations of rigid-obj	ects.						
1-3. Properties of trans	formation mat	rix.							
2. Kinematics									
2-1. Description of relat	ive positions a	ind orientations of mar	iipulator links.						
2-2. Transformation of I	manipulator po	sitions and orientations	S.						
2-3. Inverse kinematics.	forces								
3-1 Linear and rotation	al velocities of	rigid-objects							
3-2 Velocities of manin	ulator links	ligid objects.							
3-3. Static forces in ma	nipulators.								
4. Dynamics									
4-1. Review of rigid-boo	ly dynamics.								
4-2. Newton-Euler and	Lagrangian for	mulations of manipulate	or dynamics.						
5. Control									
5-1. Linear control.									
5-2. Nonlinear control.									
Self Preparation and Re	view								
Read the handouts befo	re the lecture.								
Related subjects									
Fundamentals of linear a	algebra, mecha	nics and control theor	y .						
Notes for textbook									
Handouts will be prepare	ed.					[
Reference1	Book title	Introduction to Rob	otics: Mechanics	and Control, 3rd	ISBN				
	A		Datitation	Durantian I Inil	Dahlah	2005			
Deferrer a 0	Author	J. J. Uraig	Publisher	Prentice Hall	Publish year	2005			
Referencez	DOOK TITIE	Robot Modeling and	Control	1	ISBN				
	AuthorM. W. Spong, S. Hutchinson, M.PublisherJohn Wiley & SonsPublish year2006Vidyasagar								
Notes for reference									
Goale to be echiaved									
Be able to derive kinem	atics and duna	mics of robotic maninu	lators						
Be able to design motio	n controllers f	nics of robotic manipulators	1015.						
Evaluation of achievem	ant.		••						
The grade will be determ	nined only by t	he intermediate and er	nd-of-term exami	ination scores (100 g	%).				
					- <i>,</i> .				

The credit of this course is given if the score of the above examination is 60% or over. Grade levels are C (60% - less than 70%), B (70 - less than 80%), A (80 - less than 90%) and S (90% or over). **Examination**

定期試験を実施(対面)

Examination(Face to Face)
Details of examination

Other information

Office: Room D-406, E-mail uchiyama@tut.jp Reference URL

Office hours

Contact the lecturer by e-mail first.

Relations to attainment objectives of learning and education

Key words

(M41630400)Robot Kinematics[Robot Kinematics]

Subject	Robot Kinem	atics[Robot Kinematics	s]					
name[English]								
Schedule number	M41630400		Subject area	Advanced Mechanical Engineering	Required or elective	Elective		
Time of starting a course	Fall1 term		Day of the week,period	Wed.4~4	Credit(s)	1		
Faculty	Graduate Program for Master's Degree Subject 1~ grade							
Department Offered	Mechanical E	Mechanical Engineering M1 grade						
Charge teacher	内山 直樹し	JCHIYAMA Naoki						
name[Roman alphabet								
mark]								
Numbering	MEC_MAS55	025						
Objectives of class								
Provides fundamental k joints).	inematics of ro	obotic manipulators (m	ultiple rigid-bodie	es connected in ser	ies with revolut	e or prismatic		
Contents of class								
1. Representation and t	ransformation of	of positions and orienta	ations in 3-D spac	ce				
1–1. Description of posit	tions and orien	tations in 3-D space.						
1-2. Transformation of p	positions and o	rientations of rigid-obj	ects.					
1-3. Properties of trans	formation matr	ix.						
2. Ninematics 2–1. Description of relat	ive positions a	nd orientations of man	inulator links					
2-1. Description of relat	nve posicions a	sitions and orientations						
2–3. Inverse kinematics.			5.					
3. Velocities and static	forces							
3–1. Linear and rotation	al velocities of	rigid-objects.						
3-2. Velocities of manip	ulator links.							
3–3. Static forces in ma	nipulators.							
Self Preparation and Re	view							
Read the handouts befo	re the lecture.							
Related subjects								
Fundamentals of linear a	algebra and me	chanics.						
Notes for textbook	- d							
Paradouts will be prepare	eu. Book title	Introduction to Pob	ation: Machanian	and Control 2rd	ICDN			
Kalaranca i	Book uue	Edition						
	Author	J. J. Craig	Publisher	Prentice Hall	Publish year	2005		
Referencez	BOOK TITIO	Robot Modeling and	Control	I	ISBN			
	Author	M. W. Spong, S. Hutchinson, M.	Publisher	John Wiley & Sons	Publish year	2006		
		Vidyasagar						
Notes for reference								
Goals to be achieved								
Be able to derive kinem	atics of robotic	e manipulators.						
Evaluation of achieveme	ent	and-of-term over an	ore					
Framination								
定期試験を実施(対面)								
Examination(Face to Face	ce)							
Details of examination								
The grade will be detern	nined only by t	he end-of-term exami	nation score (100	%).				

The credit of this course is given if the score of the above examination is 60% or over. Grade levels are C (60% - less than 70%), B (70 - less than 80%), A (80 - less than 90%) and S (90% or over). Other information Office: Room D-406, E-mail uchiyama@tut.jp Reference URL Office hours Contact the lecturer by e-mail first. Relations to attainment objectives of learning and education Key words

(M41630410)Computational Mechanics[Computational Mechanics]

Subject nemo[English]	Computational	Maahaniaa[Computati	anal Machanica]						
	MA1620410	Subject arres		Pequired	Flective				
	10141030410	Subject area	Machanical	noquired Or	LIECTIVE				
			Engineering	01000140					
Time of starting a source	Fall1 torm	Day of the		Credit(e)	1				
Time of starting a course		Day of the	Tue. I e I	Great(s)	1				
Feaulty	Graduate Progr	am for Master's Degr		Subject grade	1~				
Paculty Department Offered	Mechanical Eng	ineering	66	Beggining	M1				
	Weenanical Eng	liteering	grade						
Charge teacher name[Roman		森 謙一郎 MORI Ken-Ichiro							
alphabet mark]									
Numbering	MEC MAS5302	MEC MAS53025							
Objectives of class		-							
With the recent development of	computers nume	rical methods tend t	a ha usad in tha fi	old of manufacturin	n processes The				
finite element method is mainly a	volained in this l	ecture. The finite ele	ment method is wi	idely applied to engi	neering problems				
such as solid mechanics fluid me	chanics etc			idely applied to eligi	neering problems				
Contents of class	011011103, 010.								
1st week: Numerical Methods: fin	ite difference met	thad finite element m	ethod and boundar	v element method					
2nd week: Finite difference met	had for heat an	nduction: discretizate	on of differential a	quation governing	heat conduction				
calculation of temperature distrib	ution			quation governing					
3rd week: Basic equations in soli	d mechanics: thre	e-dimensional stress	and strain equilibri	um equations const	itutive equations				
in elasticity and plasticity yield o	riteria incompres	sibility condition etc	and scium, equilibri	un oquations, consi					
4th week: Finite element method	for elastic deform	nation: triangular elem	ents distributions	of displacement and	strain				
5th week: Equilibrium equations of	f nodal forces st	iffness matrix		or alopidoomone and	ou un				
6th week: Treatment of houndary	conditions	maan,							
7th week: Plasticity elastic-plast	ic finite element :	method							
8th week: Summary		method							
our week. ourmary									
Out Descention and Destant									
Self Preparation and Review									
solid mechanics									
Related subjects									
Strength of material, Solid mecha	nics, Numerical n	nethods							
Notes for textbook									
Handout									
Notes for reference									
Goals to be achieved									
To understand the finite element	method								
Evaluation of achievement									
Reports of every week									
Examination									
その他									
Other									
Details of examination									
solid mechanics. calculation using	g finite element m	ethod, numerical met	nods, etc.						
Other information	•	,	*						
room number: D-606									
extension number: 6707									
Reference URL									
http://plast.me.tut.ac.ip/index.en	g.html								
Office hours	-								
Tuesday									
Relations to attainment objective	s of learning and	education							
1									
To understand the numerical ana	lysis in solid mecl	nanics							

Key words

forming processes, solid mechanics, finite element method

(M41630480)Combustion Theory[Combustion Theory]

Sobedule number	e en la de die in	Ineory[Combustion	I heory]							
Schedule Humber	M41630480		Subject #	area	Advanced	Required or	Elective			
					Mechanical	elective				
					Engineering					
Time of starting a	Fall2 term		Day of	the	Mon.3~3	Credit(s)	1			
course			week,per	iod						
Faculty	Graduate Pro	Graduate Program for Master's Degree Subject 1~								
						grade				
Department Offered	Mechanical E	Engineering				Beggining	M1			
			grade							
Charge teacher	│中村 祐二ト	中村 祐二 NAKAMURA Yuji								
name[Roman alphabet										
mark]										
Numbering	MEC_MAS56	025								
Objectives of class										
エネルギーの大半を化	石燃料の燃焼カ	から得ている. しかし	, 化石燃料	の枯渇	,環境問題等の負	の側面も抱えてい	いる. 高効率燃			
焼技術、低環境負荷技	術が求められて	いる.本講義ではそ	その根本であ	る燃焼	問題に関する理論	的考察を講義す	3			
This coursework offers	the advanced a	approach to underst	anding the c	ombus	tion processes and	its impact. Stud	lents can learn			
the theoretical approac	h to understand	the feature of con	nbustion and	gain fu	undamentals of the	pretical aspect or	o combustion.			
				3						
Contonto of alass										
UONTENTS OF CLASS	hundlen I									
#1 Introduction to com	pustion phenon	nena								
#2 Governing equation	s and non-dime	nsionalization								
#3 chemical reaction										
#4 Ignition										
#5 One-dimensional fla	me theory									
#6 Fendell curve										
#7 mixture fraction app	roach									
#8 droplet combustion										
Students are expected understanding what was	d to complete s taught in the c	their homework (coursework.	if any) and	exerci	ise/training on a	voluntarily basis	to gain deep			
Related subjects										
Fluid domenting Manager		t Oraclastica and								
Fluid dynamics, Mass a	nd heat transpo	rt, Combustion engi	ineering (rela	ited co	urseworks)					
Fluid dynamics, Mass an Notes for textbook	nd heat transpo	rt, Combustion engi	ineering (rela	ted co	urseworks)					
Fluid dynamics, Mass ar Notes for textbook	nd heat transpo	rt, Combustion engi	ineering (rela	ited co	urseworks)					
Fluid dynamics, Mass ar Notes for textbook	nd heat transpo	rt, Combustion engi	ineering (rela	ted co	urseworks)					
Fluid dynamics, Mass an Notes for textbook	nd heat transpo	rt, Combustion engi	ineering (rela	ited co	urseworks)					
Fluid dynamics, Mass an Notes for textbook	<u>id heat transpo</u>	rt, Combustion engi	ineering (rela	ted co	urseworks)					
Fluid dynamics, Mass an Notes for textbook	nd heat transpo the materials (p	ort, Combustion engi opt slide, academic (ineering (rela papers) as n	ited co ecessa	urseworks)					
Fluid dynamics, Mass an Notes for textbook	the materials (p	ort, Combustion engi	papers) as n	ted co ecessa	urseworks) ry	ICDN	0-10-			
Fluid dynamics, Mass an Notes for textbook	nd heat transpo the materials (p Book title	ort, Combustion engi opt slide, academic (Fundamental Asp	ineering (rela papers) as n 	ted co ecessa ibustio	urseworks) ry n	ISBN	0-19-			
Fluid dynamics, Mass an Notes for textbook	the materials (p	ppt slide, academic p Fundamental Asp	papers) as n pects of Com	ecessa	urseworks) ry n	ISBN	0-19- 507626-5			
Fluid dynamics, Mass an Notes for textbook	the materials (p Book title Author	ppt slide, academic p Fundamental Asp A. Linan and F.A.	papers) as n pects of Com . Publishe	ecessa bustio	urseworks) ry n Oxford Press	ISBN Publish year	0–19– 507626–5 1993			
Fluid dynamics, Mass an Notes for textbook	the materials (p Book title Author	ppt slide, academic p Fundamental Asp A. Linan and F.A. Williams	papers) as n pects of Con Publishe	ecessa bustio	urseworks) ry n Oxford Press	ISBN Publish year	0-19- 507626-5 1993			
Fluid dynamics, Mass an Notes for textbook	the materials (p Book title Author Book title	ort, Combustion engi opt slide, academic p Fundamental Asp A. Linan and F.A. Williams Combustion Theo	papers) as n pects of Com Publishe	ecessa bustio	urseworks) ry n Oxford Press	ISBN Publish year ISBN	0-19- 507626-5 1993 0-8053-			
Fluid dynamics, Mass an Notes for textbook	the materials (p Book title Author Book title	opt slide, academic p Fundamental Asp A. Linan and F.A. Williams Combustion Theo	papers) as n pects of Con . Publishe pry	ecessa nbustio	urseworks) ry n Oxford Press	ISBN Publish year ISBN	0-19- 507626-5 1993 0-8053- 9801-5			
Fluid dynamics, Mass an Notes for textbook	the materials (p Book title Author Book title Author	ort, Combustion engi opt slide, academic p Fundamental Asp A. Linan and F.A. Williams Combustion Theo F.A. Williams	papers) as n pects of Com Publishe pry	ecessa nbustio r	urseworks) ry n Oxford Press Benjamin-	ISBN Publish year ISBN Publish year	0-19- 507626-5 1993 0-8053- 9801-5 1985			
Fluid dynamics, Mass ar Notes for textbook	the materials (p Book title Author Book title Author	opt slide, academic p Fundamental Asp A. Linan and F.A. Williams Combustion Theo F.A. Williams	papers) as n pects of Com Publishe pry	ecessa nbustio r	urseworks) ry n Oxford Press Benjamin- Cummings	ISBN Publish year ISBN Publish year	0-19- 507626-5 1993 0-8053- 9801-5 1985			
Fluid dynamics, Mass and Notes for textbook Notes for textbook Instructors will provide Reference1 Reference2 Reference3	the materials (p Book title Author Book title Author Book title	ort, Combustion engi opt slide, academic (Fundamental Asp A. Linan and F.A. Williams Combustion Theo F.A. Williams Principles of Com	papers) as n pects of Com Publishe ory Publishe	ecessa Ibustio r	urseworks) ry n Oxford Press Benjamin– Cummings	ISBN Publish year ISBN Publish year ISBN	0-19- 507626-5 1993 0-8053- 9801-5 1985			
Fluid dynamics, Mass and Notes for textbook Notes for textbook Instructors will provide Reference1 Reference2 Reference3	the materials (p Book title Author Book title Author Book title Author	opt slide, academic p popt slide, academic p Fundamental Asp A. Linan and F.A. Williams Combustion Theo F.A. Williams Principles of Con K.K.Kuo	papers) as n pects of Com Publishe nbustion Publishe	ecessa Ibustio r	urseworks) ry n Oxford Press Benjamin– Cummings	ISBN Publish year ISBN Publish year ISBN Publish year	0-19- 507626-5 1993 0-8053- 9801-5 1985 2005			
Fluid dynamics, Mass an Notes for textbook	the materials (p Book title Author Book title Author Book title Author Author	opt slide, academic p popt slide, academic p Fundamental Asp A. Linan and F.A. Williams Combustion Theo F.A. Williams Principles of Con K.K.Kuo	papers) as n pects of Con . Publishe ory Publishe nbustion Publishe	ecessa nbustio r r	urseworks) ry n Oxford Press Benjamin- Cummings John Wiley & Sons	ISBN Publish year ISBN Publish year ISBN Publish year	0-19- 507626-5 1993 0-8053- 9801-5 1985 2005			

N/A
Goals to be achieved
Learn what is the effective mathematical approach (with proper simplification) to solve combustion problem theoretically.
For board and a set of a set o
Evaluation of achievement
Instructors will rate your score via assignments. To quality the coursework, students must pass ou point out of 100 and rating is as follows: $S(x, 0)$ points). $A(x, 0)$ points), $B(x, 0)$ points), $C(x, 0)$ points).
Examination
授業と定期試験(対面)
Regular Class and Examination(Face to Face)
Details of examination
Report and oral examination will be held (subject to change according to the number of registered students)
Other information
If you have any question, please ask course instructor (Assoc. Prof. Nakamura).
Assoc. Prof. Nakamura: Rm D311, ext. 6647, mail:yuji@me.tut.ac.jp
Reference URL
特になし
N/A
Office hours
Send mail to instructors to book their time first, if you would like to visit to have face-to-face-discussion
Kelations to attainment objectives of learning and education
Key words

Combustion, Thermal Engineering, Thermodunamics, Chemical Reaction

(M42610020)Thesis Research on Electrical and Electronic Information Engineering[Thesis Research on Electrical and Electronic Information Engineering]

Subject name[English]	Thesis Research on Electrical and Electronic Information Engineering[Thesis Research on							
	Electrical and Electronic Information Engineering]							
Schedule number	M42610020	Subject area	Advanced	Required or	Required			
			Electrical and	elective				
			Electronic					
			Information					
Time of starting a source	2Vears	Day of the	Engineering	Credit(c)	6			
TIME OF STATUNE & COURSE	210015	week period	Intensive	Great(s)	U			
Faculty	Graduate Program	n for Master's Degre	e	Subject grade	1~1			
Department Offered	Electrical and Ele	ctronic Information	Engineering	Beggining	M2			
			-	grade				
Charge teacher name[Roman	S2系教務委員, 2	S2系教務委員, 2系各教員 2kei kyomu Iin-S, 2kei kakukyouin						
alphabet mark]								
Numbering	ELC_MAS51025							
Objectives of class								
The thesis research aims to prov	vide a practical exp	perience of researcl	n work, and to acqu	ire his/her researd	ch skill with deep			
understanding of the electrical an	a electronic inform	ation engineering.						
The research subject depends of	n the supervisor or	d the recearch ma	un vou belong to E	very student will h	ave an individual			
research subject For more detail	s please contact w	ith your supervisor	up you belong to. E	very student will r	ave an muiviqual			
		tar your supervisor.						
Self Prenaration and Review								
Related subjects								
Notes for textback								
Reference and material will be av	ailable from the our	ervisor						
Notes for reference								
Goals to be achieved								
To get something new on individu	al research fields.							
To develop his/her research skill	including the plann	ing and the presenta	ation.					
Evaluation of achievement								
Presentation, Thesis, Coursework	, and Outcomes are	e evaluated generall	у.					
Examination								
試験期間中には何も行わない								
None during exam period								
Details of examination								
Oth an informatic ::								
other information								
Deference UDI								
Uffice hours								
.								
Relations to attainment objective	s of learning and e	ducation						
Key words								
(M42610020)Thesis Research on Electrical and Electronic Information Engineering[Thesis Research on Electrical and Electronic Information Engineering]

Subject name[English]	Thesis Research on Electrical and Electronic Information Engineering[Thesis Research on						
	Electrical and Electronic Information Engineering]						
Schedule number	M42610020	Subject area	Advanced	Required or	Required		
			Electrical and	elective			
			Electronic				
			Information				
			Engineering				
Time of starting a course	2Years	Day of the	Intensive	Credit(s)	6		
Feaulty	Graduate Program	veek,period		Subject mode	1~1		
Department Offered	Electrical and Electrical	ctronic Information	Engineering	Beggining	M1		
				grade			
Charge teacher name[Roman	S2系教務委員, 2	2系各教員 2kei kyor	mu Iin−S, 2kei kakuł	kyouin			
alphabet mark]							
Numbering	ELC_MAS51025						
Objectives of class							
The thesis research aims to prov	vide a practical exp	perience of research	n work, and to acqu	uire his/her researd	ch skill with deep		
understanding of the electrical an	d electronic inform	ation engineering.					
	- 4h						
The research subject depends of	n the supervisor an	id the research gro	up you belong to. E	very student will h	have an individual		
research subject. For more detail	s, please contact w	ith your supervisor.					
Solf Propagation and Paviaw							
Deleted autients							
Notes for textbook							
Reference and material will be av	ailable from the sup	ervisor.					
Notes for reference	•						
Goals to be achieved							
To get something new on individu	al research fields.						
To develop his/her research skill	including the planni	ing and the presenta	ation.				
Evaluation of achievement							
Presentation, Thesis, Coursework	, and Outcomes are	e evaluated generall	у.				
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							
Others informent'							
Other information							
Deferrer en LIDI							
0							
Office hours							
							
Relations to attainment objective	s of learning and e	ducation					
(B) Sound ethics and social aware	eness as advanced-	-level engineers and	researchers				
Be conscious of specialized and	ethical responsibili	ties as advanced-le	vel engineers and	researchers; have t	the ability to set,		
solve and evaluate technical issue	es in society						
(C) Practical and creative skills to	o utilize advanced k	nowledge in an inte	grated manner				

Have advanced knowledge about electrical and electronic information engineering as well as related fields; 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 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 research and development and put them into practice; and to create new technologies to solve problems

(D) Communication skills for global success

Have the communication skills to effectively express one's own ideas and results while working on 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; to contribute to the team's achievements through working cooperatively with other members

(E) Inquisitive mind and continuous learning ability for changes in the state-of-the-art technology and 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

(M4261002T)Thesis Research on Electrical and Electronic Information Engineering[Thesis Research on Electrical and Electronic Information Engineering]

Subject name[English]	Thesis Research on Electrical and Electronic Information Engineering[Thesis Research on						
	Electrical and Electronic Information Engineering]						
Schedule number	M4261002T	Subject area	Advanced	Required or	Required		
			Electrical and	elective			
			Electronic				
			Information				
Time of starting a second	Veen	Dava of the	Engineering	0	6		
lime of starting a course	Year	Day of the	Intensive	Great(s)	0		
Faculty	Graduate Program	n for Master's Degre	20	Subject grade	2~2		
Department Offered	Electrical and Elec	ctronic Information	Engineering	Beggining	 M1		
			5 5	grade			
Charge teacher name[Roman	S2系教務委員, 2	2系各教員 2kei kyor	nu Iin−S, 2kei kaku	kyouin	1		
alphabet mark]							
Numbering	ELC_MAS51025						
Objectives of class							
The thesis research aims to prov	vide a practical exp	perience of research	n work, and to acq	uire his/her researd	ch skill with deep		
understanding of the electrical an	d electronic inform	ation engineering.					
Contents of class							
The research subject depends or	n the supervisor an	nd the research gro	up you belong to.	Every student will h	nave an individual		
research subject. For more detail	s, please contact w	ith your supervisor.					
.							
Self Preparation and Review							
Related subjects							
Notes for textbook							
Reference and material will be av	ailable from the sup	pervisor.					
Notes for reference	· · ·						
Goals to be achieved							
To get something new on individu	al research fields.						
To develop his/her research skill	including the planni	ing and the presenta	ation.				
Evaluation of achievement							
Presentation, Thesis, Coursework	, and Outcomes are	e evaluated generall	у.				
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							
Other information							
Deferrence UDI							
Reference UKL							
065							
Relations to attainment objective	s of learning and education						
(B) Sound ethics and social aware	eness as advanced-	-level engineers and	researchers				
Be conscious of specialized and	ethical responsibili	ties as advanced-le	vel engineers and	researchers; have t	the ability to set,		
solve and evaluate technical issue	es in society						
(C) Practical and creative skills to	o utilize advanced k	nowledge in an inte	grated manner				
Have advanced knowledge about	electrical and elec	tronic information e	engineering as well	as related fields; h	ave 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 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 research and development and put them into practice; and to create new technologies to solve problems

(D) Communication skills for global success

Have the communication skills to effectively express one's own ideas and results while working on 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; to contribute to the team's achievements through working cooperatively with other members

(E) Inquisitive mind and continuous learning ability for changes in the state-of-the-art technology and 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

(M42610040)Seminar on Electrical and Electronic Information Engineering[Seminar on Electrical and Electronic Information Engineering]

Subject name[English]	Seminar on Electrical and Electronic Information Engineering[Seminar on Electrical and					
	Electronic Information Engineering]					
Schedule number	M42610040	Subject area	Advanced	Required or	Required	
		-	Electrical and	elective		
			Electronic			
			Information			
			Engineering			
Time of starting a course	Year	Day of the week.period	Intensive	Credit(s)	6	
Faculty	Graduate Program	n for Master's Degre	e	Subject grade	2~	
Department Offered	Electrical and Elec	ctronic Information	Engineering	Beggining	M1	
Ohanna tarahan aras (Damar				grade		
Charge teacher name_Roman	52杀教務安員 24	kei kyomu lin-S				
alphabet markj						
	ELC_WASSIDIS					
Objectives of class						
The seminar aims to provide a b	road understanding	; of theoretical and	experimental appro	oches related to t	the electrical and	
electronic information engineering	g for the research w	ork of his/her mast	ter thesis.			
			с. н. н. :			
The class provides both of fundar	nental knowledge o	n the research work	of master thesis a	nd the most advand	ced results in the	
related field by reading research p	papers and monogra	aphs. Contents of th	ne class depend on	the supervisor. To	be announced by	
Individual supervisors.						
Sell Preparation and Review						
						
Kelated subjects						
Notes for textbook						
Textbook or material will be made	available from the	supervisor. To be a	nnounced by individ	ual supervisors		
Notes for reference						
Goals to be achieved						
To acquire fundamental knowledg	e on individual rese	arch fields.				
To acquire the ability of finding a	problem, the ability	of solving the prob	lem and the present	ation skill.		
Evaluation of achievement						
Coursework, presentation and/or	report.					
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						
Other information						
Reference URL						
Office hours						
Relations to attainment objective	s of learning and e	ducation				
(B) Sound ethics and social aware	eness as advanced-	-level engineers and	researchers			
Be conscious of specialized and	ethical responsibilit	ties as advanced-le	vel engineers and r	esearchers: have	the ability to set	

Be conscious of specialized and ethical responsibilities as advanced-level engineers and researchers; have the ability to set, solve and evaluate technical issues in society

(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 to utilize 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 research and development and put them into practice; and to create new technologies to solve problems

(D) Communication skills for global success

Have the communication skills to effectively express one's own ideas and results while working on 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; to contribute to the team's achievements through working cooperatively with other members

(E) Inquisitive mind and continuous learning ability for changes in the state-of-the-art technology and 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

(M42610050)Seminar on Electrical and Electronic Information Engineering 1A[Seminar on Electrical and Electronic Information Engineering 1A]

Subject name[English]	Seminar on Electrical and Electronic. Information Engineering 1A[Seminar on Electrical and						
	Electronic Information Engineering 1A]						
Schedule number	M42610050	Subject area	Advanced	Required or	Required		
			Electrical and	elective			
			Electronic				
			Information				
			Engineering				
Time of starting a course	Year	Day of the	Intensive	Credit(s)	4		
_		week,period					
Faculty	Graduate Program	n for Master's Degre	e	Subject grade	1~		
Department Offered	Electrical and Ele	ctronic Information	Engineering	Beggining	M1		
				grade			
Charge teacher name_Roman	S2糸教務委員 2	kei kyomu Iin−S					
alphabet mark							
Numbering	ELC_MASSIUIS						
Objectives of class							
The seminar aims to provide a b	oroad understanding	of theoretical and	experimental appro	paches related to t	he electrical and		
electronic information engineering	g tor the research w	orк of his/her mast	ter thesis.				
The class provides both of fundal	mental knowledge o	n the research work	of master thesis a	ha the most advand	cea results in the		
individual supervisors	papers and monogra	apris. Contents of tr	he class depend on	the supervisor. To	be announced by		
Self Preparation and Review							
Palatad aukia ata							
Related subjects							
Notes for textbook							
Textbook or material will be made	e available from the	supervisor. To be a	nnounced by individ	lual supervisors.			
Notes for reference							
Goals to be achieved							
To acquire fundamental knowledg	e on individual rese	arch fields.					
To acquire the ability of finding a	problem, the ability	of solving the prob	lem and the present	tation skill.			
Coursework, presentation and/or	report. _70 C:60_60						
Examination	-79, 0.00-09						
試験期間中には何も行わない							
None during exam period							
Details of examination							
Other information							
Deferrence LIDI							
Office hours							
Relations to attainment objective	s of learning and e	ducation					
(B) Sound ethics and social award	eness as advanced-	level engineers and	researchers				
Be conscious of specialized and	ethical responsibilities as advanced-level engineers and researchers; have the ability to set.						
solve and evaluate technical issue	es in society						
(C) Practical and creative skills to	o utilize advanced k	nowledge in an inte	grated manner				
Have advanced knowledge about	electrical and elec	tronic information e	engineering as well	as related fields; h	ave the practical		
and creative skills to utilize such	knowledge for prob	lem solving in an int	egrated 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 research and development and put them into practice; and to create new technologies to solve problems

(D) Communication skills for global success

Have the communication skills to effectively express one's own ideas and results while working on 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; to contribute to the team's achievements through working cooperatively with other members

(E) Inquisitive mind and continuous learning ability for changes in the state-of-the-art technology and 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

(M42610060)Seminar on Electrical and Electronic Information Engineering 1B[Seminar on Electrical and Electronic Information Engineering 1B]

Subject name[English]	Seminar on Electrical and Electronic. Information Engineering 1B[Seminar on Electrical and						
	Electronic Information Engineering 18]						
Schedule number	M42610060	M42610060 Subject area Advanced Required or Required					
			Electrical and	elective			
			Electronic				
			Information				
			Engineering				
Time of starting a course	Year	Day of the	Intensive	Credit(s)	2		
		week,period					
Faculty	Graduate Progran	n for Master's Degre	e	Subject grade	2~		
Department Offered	Electrical and Ele	ctronic Information	Engineering	Beggining	M2		
	00万批改千号 0			grade			
Charge teacher name_Roman	52杀教務安員 2	kei kyomu lin-S					
alphabet mark	ELC MAS51015						
The cominer sime to provide a h	rood understanding	r of theoretical and	ovportimental oppra	achoo related to t	the electrical and		
electronic information engineering	for the research w	ork of his/her mast	experimental appro	oches related to	the electrical and		
Contents of class							
The class provides both of fundar	mental knowledge o	n the research work	of master thesis a	nd the most advan	ced results in the		
related field by reading research	papers and monogra	aphs. Contents of th	ne class depend on	the supervisor. To	be announced by		
individual supervisors.					,		
Self Preparation and Review							
Related subjects							
•							
Notes for textbook							
Textbook or material will be made	available from the	supervisor. To be a	nnounced by individ	ual supervisors			
Notes for reference							
Goals to be achieved							
To acquire fundamental knowledge	e on individual rece	arch fields					
To acquire the ability of finding a	problem, the ability	of solving the prob	lem and the present	ation skill.			
Evaluation of achievement	<u>, , , , , , , , , , , , , , , , , , , </u>		P				
Coursework, presentation and/or	report.						
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							
Other information							
Reference URL							
Office hours							
Relations to attainment objective	s of learning and e	ducation					
(B) Sound ethics and social aware	aness as advanced-	-level engineers and	researchers				
Be conscious of specialized and	ethical responsibili	ties as advanced-le	vel engineers and r	researchers: have	the ability to set		
solve and evaluate technical issue	es in society				ubiiity to oot,		
(C) Practical and creative skills to	o utilize advanced k	nowledge in an inte	grated manner				
		2					

Have advanced knowledge about electrical and electronic information engineering as well as related fields; 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 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 research and development and put them into practice; and to create new technologies to solve problems

(D) Communication skills for global success

Have the communication skills to effectively express one's own ideas and results while working on 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; to contribute to the team's achievements through working cooperatively with other members

(E) Inquisitive mind and continuous learning ability for changes in the state-of-the-art technology and 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

(M42630100)Methodology of R & D 1[Methodology of R & D 1]

Subject name[English]	Methodology of	R & D 1 Methodology	/ of R & D 1]		
Schedule number	Required or	Elective			
			Electrical and	elective	
			Electronic		
			Information		
			Engineering		
Time of starting a course	Fall term	Day of the	Tue.3~3	Credit(s)	2
Faculty	Graduate Progra	am for Master's Degre		Subject grade	1~
Department Offered	Electrical and El	ectronic Information	Engineering	Beggining	M1
			0	grade	
Charge teacher name[Roman	S2系教務委員	2kei kyomu Iin-S			
alphabet mark]					
Numbering	ELC_MAS58025				
Objectives of class					
The class aims to provide a ba	sic understanding	of R&D methodolog	gy related to the e	lectrical and elect	ronic information
engineering for the research work	of his/her maste	r thesis.			
Contents of class					
The class provides some fundam	ental tips to cond	luct R&D work effect	tively. Contents of	the class depend o	n the supervisor.
To be announced by individual su	pervisors				
Self Preparation and Review					
Related subjects					
Notes for textbook					
Reference and material will be av	ailable from the su	upervisor.			
Notes for reference					
Goals to be achieved	the second former law				
To acquire the ability of identif	ying and formulat	ing research probler	n, planning and imp	plementing specific	research tasks,
Evaluation of achievement	ig outcomes.				
Coursework and presentation are	evaluated genera	llv			
Grades: S: 90-100 A:80-89 B:70	-79 C·60-69	ily.			
Examination	75, 0.00 05				
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 objective	s of learning and	education			
(C) Practical and creative skills to	o utilize advanced	knowledge in an inte	grated manner		
Have advanced knowledge about	electrical and ele	ectronic information	engineering as well	as related fields [.] h	ave the practical
and creative skills to utilize such	knowledge for pro	blem solving in an int	egrated manner		
(C1) Have the skills to volunt	arily acquire the	ories and applied ki	nowledge about ele	ectrical and electr	ronic information
engineering as well as related fiel	ds; to utilize such	knowledge in an inte	grated manner		
(C2) Have the skills to learn, b	by experience, me	ethodologies for res	earch and develop	ment through integ	grating extensive

knowledge about electrical and electronic information engineering 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

(M42630120)Material Science for Electronics 1[Material Science for Electronics 1]

Subject name[English]	Material Science	for Electronics 1[Ma	aterial Science for E	lectronics 1]	
Schedule number	M42630120	Subject area	Advanced	Required or	Elective
			Flectrical and	elective	
			Electronic		
			Information		
			Engineering		
Time of starting a course	Fall term	Dav of the	Mon.5~5	Credit(s)	2
		week,period			
Faculty	Graduate Progran	n for Master's Degre	e	Subject grade	1~
Department Offered	Electrical and Ele	ctronic Information	Engineering	Beggining	M1
				grade	
Charge teacher name[Roman	福田 光男,内田	裕久,中村 雄一 F	UKUDA Mitsuo, UC	HIDA Hironaga, NA	KAMURA Yuichi
alphabet mark]					
Numbering	ELC_MAS52025				
Objectives of class					
Objective of this subject is to	learn about the fo	refront research a	nd development on	spin electronics a	and photonics in
electronic materials, and thermoe	lectronics.				
Contents of class					
1. Photonics.					
You will learn about photonic mat	erials and devices.				
1) photonic matreials and 2) (nan	o-) photonic device	s.			
2.Spin electronics.					
You will learn about advanced ma	gnetic materials an	d area from fundam	entals to application	s of magnetics.	
1) Magnetic materials, 2) Applicat	ions of magnetics a	and magnetic mater	ials, 3) Correlations	between spins and	various physical
quantities, 4) Micro-magnetic dev	ices and systems, {	5) Spintronics and s	pin photonics.		
3. Thermoelectronics.					
You will learn about advanced the	rmoelectronic mate	erials and area from	fundamentals to ap	olications of therm	pelectronics.
1) thermoelectronic materials. 2)	Applications and p	processing of therm	oelectronic material	s. 3) Thermoelectr	onic devices and
svstems.				-, -, -,	
Self Preparation and Review					
Related subjects					
Notes for textbook					
l ecture materials will be distribut	ed				
Notes for reference					
Goals to be achieved					
It aims at acquiring the broad k	nowledge of recear	oh and developmen	t by learning about	the bases of read	ont research and
development in various fields	lowledge of resear	ch and developmen	t by learning about		ent research and
Evaluation of achievement					
The reports or tests will be set in	each categories				
The result is evaluated from the	sum of those marks				
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					
Other information					
Reference LIRI					
Uffice hours					
Please make an appointment via e	e−mail.				

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 electrical and electronic information engineering as well as related fields; 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 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 research and development and put them into practice; and to create new technologies to solve problems

Key words

photonics, spin electronics, powder processing, thermelectronics

(M42630160)Electrical Energy Systems 1[Electrical Energy Systems 1]

Subject name[English]	Electrical Energy	Systems 1[Electric	al Energy Systems]	
Schedule number	M42630160	Subject area	Advanced	Required or	Elective
			Electrical and	elective	
			Electronic		
			Information		
			Engineering		
Time of starting a course	Fall term	Day of the week,period	Mon.4~4	Credit(s)	2
Faculty	Graduate Program	m for Master's Degr	ee	Subject grade	1~
Department Offered	Electrical and Ele	ectronic Information	Engineering	Beggining grade	M1
Charge teacher name[Roman alphabet mark]	滝川 浩史, 櫻井	庸司,穗積 直裕	TAKIKAWA Hirofumi	, SAKURAI Yoji, HO	DZUMI Naohiro
Numbering	ELC_MAS53025				
Objectives of class					
This series of lectures is implem	nented as an intro	duction to electrica	l energy systems. I	n order to utilize e	electric energy in
various fields, lectures on the g	eneration, transmis	sion. distribution a	nd control of electr	ic energy, high vol	tage engineering.
secondary batteries discharge r	olasma are given '	It is being useful a	s reference and se	lf-study guide for	the professional
dealing with this important area	There are three sul	o courses to choose	from	in olday galao ioi	
Contents of class					
Sub Course 1					
1 Phenomena of ionized gas					
2 Characteristics of discharge n	asma				
3 Recent trend in plasma applica	asina				
Sub Course 2					
1 Lithium-ion Batteries					
2 Post Lithium-jon Batteries					
3 Recent Trend in Electrochemic	al Energy Storage	Devices			
Sub Course 3		2011000			
1. Energy propagation thorough d	listributed medium.				
2. Diagnosing techniques for indu	strial and biomedic	al matters.			
3. Assessment for high voltage in	sulation system for	r power use.			
Self Preparation and Review					
Related subjects					
Electric Power Systems, Dielectr	ics and Electrical Ir	nsulation, Energy Co	nversion, Plasma So	cience	
Notes for textbook					
Materials will be prepared by the	lecturers.				
Notes for reference					
To understand the basic knowled	ge of electric enrgy	/ systems and relate	ed fields.		
Goals to be achieved					
Marks will be based on the final e	xamination or repo	rt (100%).			
Evaluation of achievement					
Examination					
Examination					
定期試験を実施(対面)					
Examination(Face to Face)					
Details of examination					
Other information					
Office:					
H. Takikawa: C-311, TEL: 0532-4	4–6727, E-mail: tak	kikawa@ee.tut.jp			
Y. Sakurai: C-305, TEL: 0532-44-	-6722, E-mail: saku	rai@ee.tut.jp			
N. Hozumi: C-309, TEL: 0532-44-	-6758, E-mail: hozu	ımi@ee.tut.jp			
Reference URL					
077					
Office hours					

Before and/or after the lecture and at any time after making the appointment based on e-mail. 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 electrical and electronic information engineering as well as related fields; 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 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 research and development and put them into practice; and to create new technologies to solve problems

Key words

Electric Energy, Electric Power, High Voltage, Secondary Battery, Plasma, Electrical Insulation

(M42630200)Semiconductor Physics 1[Semiconductor Physics 1]

Subject name[English]	Semiconductor Physics 1[Semiconductor Physics 1]						
Schedule number	M42630200	Subject area	Advanced	Required or	Elective		
			Electrical and	elective			
			Electronic				
			Information				
			Engineering				
Time of starting a course	Fall term	Day of the week,period	Mon.2~2	Credit(s)	2		
Faculty	Graduate Progran	n for Master's Degre	e	Subject grade	1~		
Department Offered	Electrical and Ele	ctronic Information	Engineering	Beggining grade	M1		
Charge teacher name[Roman alphabet mark]	若原 昭浩,岡田	浩, 河野 剛士 WA	KAHARA Akihiro, O	KADA Hiroshi, KAV	VANO Takeshi		
Numbering	ELC_MAS54025						
Objectives of class							
先端的な半導体デバイスのための	の理論、デバイス構	诰,設計や作製プロ	セスを理解すること	を目標とする。			
To understand semiconductor ph	vsics. structure. de	sign. and processing	of advanced semic	onductor devices.			
Contents of class		0, 1 0					
この科目は前半と後半の2つの部	3分から構成される。	前半では pn 接合・	や MOS 構造におけ	る多数および少数	キャリアの振る舞		
いについて扱う。注入された少数	キャリアのダイナミ	クスについても触れ	る。後半では学生か	「以下から1つのト	ピックスを選択す		
a.							
1 ナノ構造デバイスの作製および	(評価技術(岡田)						
2. バンドエンジニアリングと量子交	加温(2013年) カ果デバイス(若原)						
3. 先端 MEMS/NEMS 技術(河野))						
講義に加えて学生が主体的に取	り組むケーススタデ	シュション シュージャン シュージョン ション ション ション ション ション ション ション ション ション シ	は与えられた課題に	ついての調査研究	とわ 要求を満足		
はるデバイスを設計するなどの理	周に取り組み プレ	イロションを行	るテルジャンに休逸い	こういての前直的ク	して、女小と洞足		
This subject consists of two part	s The first half he	gins by introducing	✓o majority- and minor	rity–carrier behavio	or in fundamental		
pn-junction and MOS structures	Injected minority	carrier dynamics i	n semiconductors is	s also included. O	n the latter half.		
student choose one from followin	g three topics.	darrier dynamice i					
	5 ····						
1 Eabrication and characterizatio	n technology for N	anosturecture devic	es (Prof Okada)				
2 Band engineering and quantum	effect devices (Pro	of Wakahara)					
3 Advanced MEMS/NEMS technol	ologies(Prof. Kawan	o)					
		0)					
Adding to look was by pustagon	, in this subject .		a annoticated Norma	lu atudanta ava v	autical to sive a		
Adding to lectures by professors	s, in this subject, a	a case study is als	o conducted. Name	ived encodifications	equired to give a		
presentation on researches on th	e given topics, and	on design of device	s triat satisfies requ	ireu specifications.			
Solf Propagation and Paviaw							
Sell Freparauon and Review							
Related subjects							
solid-state physics basic of semi	conductor physics	quantum mechanico	s thermodynamics	and electronics			
Solid State physics, basic of Selli	sendation physics,	quantani methaniit	s, alormouynamios, a				
Maatan'a aannaa Samiaan t	abuaiaa 0						
master's course: Semiconductor		au optume mer - I '	thorm a dura!	and alastraris-			
solid-state physics, basic of semi	conductor physics,	quantum mechanics	s, thermodynamics, a	and electronics			
Semiconductor Physics2, Master	course						
Notes for textbook	D 1 1 1						
S.M.Sze, Physics of Semiconduct	or Devices (Wiley)						
関連する参考文献やデータ、資料	はなどは講義で配布	する。					
S.M.Sze, Physics of Semiconduct	or Devices (Wiley)						
Related references, data, printed	matters will be give	n in the class.					
Notes for reference							

Goals to be achieved 1. 半導体における基本的な物理現象を深く理解し、学部生にその内容を解説できること 2. 基本的な半導体デバイスの動作原理を学部生に解説できること 3. 与えられた要求仕様を満足する半導体デバイスの基本部分を設計することができること 4. 与えられたトピックスを調査し、解説できること You will be able to: 1. Deeply understand fundamental phenomena in semiconductors, and make an interpretation of it to undergraduate students. 2. Explain operation principle of basic semiconductor devices to undergraduate students. 3. Design a essential part of semiconductor device that satisfies the given specification. 4. Investigate on given topics, and give a lecture on this. **Evaluation of achievement** ケーススタディ発表(50%)および研究調査レポート(50%)で評価する。 S:ケーススタディの解説・レポートの合計点(100 点満点)が 90 点以上 A:ケーススタディの解説・レポートの合計点(100 点満点)が 80 点以上 B:ケーススタディの解説・レポートの合計点(100 点満点)が 70 点以上 C:ケーススタディの解説・レポートの合計点(100 点満点)が 60 点以上 Achievement of presentation of the case study(50%), and writing research reports(50%). S: Total score is over 90/100 A Total score is over 80/100 B:Total score is over 70/100 C:Total score is over 60/100 Examination その他 Other Details of examination 評価方法については講義の中で指示する。 Qualification will be directed in the class. Other information 履修要件などを指導教員と相談の上、予め下記の教員にコンタクトすること。 若原昭浩:C-608 wakahara[at]ee.tut.ac.jp 岡田浩:B-304 okada[at]las.tut.ac.jp 河野剛士: C-603 kawano[at]ee.tut.ac.jp Before choosing this class, get advice of your supervisor(s), and then contact to following professors. Akihiro Wakahara: C-608 wakahara[at]ee.tut.ac.jp Hiroshi Okada: B-304 okada[at]las.tut.ac.jp Takeshi Kawano:C-603 kawano[at]ee.tut.ac.ip Reference URL http://www.int.ee.tut.ac.jp http://www.eiiris.tut.ac.jp http://www.int.ee.tut.ac.jp http://www.eiiris.tut.ac.jp Office hours 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 electrical and electronic information engineering as well as related fields; 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 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 research and development and put them into practice; and to create new technologies to solve problems

Key words

Solid-state electronics, semiconductor physics, laser diode, low-dimensional quantum devices

(M42630260)Advanced Electronic Information System 1[Advanced Electronic Information System 1]

Subject name[English]	Advanced Electro	dvanced Electronic Information System 1[Advanced Electronic Information System 1]					
Schedule number	M42630260	Subject area	Advanced	Required or	Elective		
			Electrical and	elective			
			Electronic				
			Information				
			Engineering				
Time of starting a course	Fall term	Day of the	Mon.1~1	Credit(s)	2		
		week,period					
Faculty	Graduate Program	n for Master's Degre	Subject grade	1~			
Department Offered	Electrical and Elec	ctronic Information	Engineering	Beggining	M1		
				grade			
Charge teacher name[Roman	市川 周一,田村	市川 周一, 田村 昌也 ICHIKAWA Shuichi, TAMURA Masaya					
alphabet mark]							
Numbering	ELC_MAS55025						

Objectives of class

The aims of this lecture:

(1) To understand various hardware algorithms for computer arithmetic,

(2) To understand the role and design of microwave filter used in wireless communications.

Contents of class

This lecture consists of two themes shown below.

(1) Algorithm is a procedure for solving a mathematical problem in a finite number of steps. The required calculation time and memory space depend on the algorithm, even for the same problem. Thus, it is essential to select the best algorithm for a given set of conditions.

In digital hardware, an algorithm is realized as a logic design. This lecture aims to understand various hardware algorithms for computer arithmetic, together with the corresponding designs of arithmetic hardware.

Week 1: Introduction Week 2, 3: Algorithms for addition Week 4,5: Algorithms for multiplication Week 6,7: Algorithms for division Week 8: Examination

(2) The aim of this course is to acquire the knowledge and design techniques of microwave filter used in wireless communications.

1. Introduction of microwave filter used in wireless communications

- 2. Image method and network synthesis method for filter design
- 3. Design of prototype filter and its Mapping
- 4. Inverter design

5. Resonator design

- 6. Coupled line design
- 7. Q factor and its evaluation
- 8. Examination

Self Preparation and Review

Related subjects

Prerequisite (1): Fundamental knowledge and skills of logic design, algorithms, and computer structure. Prerequisite (2): Fundamental Knowledge and skills of high-frequency circuit and electromagnetic engineering **Notes for textbook** No textbooks are assigned.

Notes for reference

Goals to be achieved

(1) To understand various hardware algorithms for computer arithmetic,

(2) To understand the role and design of microwave filter used in wireless communications.

Evaluation of achievement

Item (1) 50%, Item (2) 50%.

Examination

定期試験を実施(対面) Examination(Face to Face)

Details of examination

TBD

Other information

(1) Shuichi Ichikawa, Room C-404, ext. 6897, E-mail: ichikawa@tut.jp

(2) Masaya Tamura, Room C-405, ext. 6754, E-mail: tamura@ee.tut.ac.jp

Reference URL

http://www.ccs.ee.tut.ac.jp/~ichikawa/lecture/

http://www.comm.ee.tut.ac.jp/em/index_en.html

Office hours

Please make an appointment for consultation with the lecturer via e-mail or direct communication in 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 electrical and electronic information engineering as well as related fields; 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 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 research and development and put them into practice; and to create new technologies to solve problems

Key words

(1) Logic design, computer arithmetic, hardware algorithm (2) Analog filter, microwave filter, high-frequency circuit design, distributed constant circuit, Electromagnetic Engineering

Subject name[English]	Seminar on Cor	nputer Science an	d Engineering I[Se	eminar on Comput	ter Science and		
Engineering I]							
Schedule number	M43610010	Subject area	Advanced Computer Science and	Required or elective	Required		
Time of starting a course	Year	Day of the	Intensive	Credit(s)	4		
Faarder	Cueduete Duerueu	week,period	-	Subia at made	1		
racuity	Graduate Program	n for Master's Degre	e	Subject grade	1~ M1		
	Computer Scienc	e and Engineering		grade	M I		
Charge teacher name[Roman	S3系教務委員3	kei kyomu Iin−S					
alphabet mark]							
Numbering	CMP_MAS51015						
各研究室が指定する情報学に関 技術情報を理解、説明、質疑・応 The course is intended for stud science and engineering. It is also aimed for students to a and technical discussion and writi Contents of class 教員が指定する最先端の技術情 教員は技術情報の内容の発見、 While specific contents depend of relevant textbooks/research pape Self Preparation and Review 教員が指定する内容に関し、予習 Consult with your advisor. Related subjects 指導教員に問い合わせること。 Consult with your advisor.	する最先端の技術 答できる能力を養う lents to study bas acquire various skil ng. 報(特に英語による 里解、説明、質疑・f on the research ar brs and report on th や復習を行う。	情報(特に英語によ)。 sic materials in dep lls, required in gener の最先端の技術情報 応答する方法につい reas students are in hem, as well as to pr	る最先端の技術情 th, related to his/ ral research work, s)について理解したる て直接指導を行う。 nvolved in, it is usu resent and discuss o	報)を発見する能力 her research subje such as those for ところを説明する。 ally the case for on the research wo)、ならびに、その acts in computer oral presentation, students to read rk of their own.		
Notes for textbook 指導教員に問い合わせること。 Consult with your advisor. Notes for reference Goals to be achieved (1)最先端の専門分野の英文が招 (2)技術的な情報を扱う英文が解 (3)論文の標準的な構成ができる (4)発表というスタイルでの情報批 (5)情報の不足を質問という形式 (1) To understand English literatuu (2) To interpret technical informat (3) To make a standard construct (4) To provide information by oral (5) To point out the lack of inform	里解でき、わかりや 釈でき、作文できる。 それができる。 で指摘できる。 re on state-of-the tion written in Engl ion of a technical p presentation. nation by questions	マすく説明できる。 る。 ーart areas of expert ish, and to write suc paper.	ise, and to explain c h information in En;	slearly. glish.			
Evaluation of achievement 技術情報の発見に向けた自主性 導教員が判定する。 Will be evaluated by taking into a involvements and so on. Examination	、技術情報の理解 accout various fac	度、説明の方法、質 tors overall, such a	[問への回答、議論 s technical explana	への参加の様子等 tion, question ansv	Fから総合的に排 vering, discussio		

試験期間中には何も行わない

None during exam period

Details of examination 課題レポートやプレゼンテーションに基づいて評価する。 Your supervisor will evaluate your presentation and your reports. **Other information**

Reference URL

Office hours

指導教員に問い合わせること。

Consult with your advisor.

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

(C2) Have the skills to learn, by experience, methodologies for research and development through integrating extensive knowledge about computer science and engineering 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

(M43610020)S πΓς **n**7

Subject name[English]	Seminar on Cor	nputer Science an	d Engineering II[Se	eminar on Compu	ter Science and		
	Engineering II]						
Schedule number	M43610020	Subject area	Advanced Computer Science and Engineering	Required or elective	Required		
Time of starting a course	Year	Day of the week,period	Intensive	Credit(s)	2		
Faculty	Graduate Program	m for Master's Degre	e	Subject grade	2~		
Department Offered	Computer Scienc	e and Engineering		Beggining grade	M2		
Charge teacher name[Roman alphabet mark]	S3系教務委員 3	kei kyomu Iin−S		8.000	L		
Numbering	CMP_MAS61015						
Objectives of class 各研究室が指定する情報学に関 技術情報を理解、説明、質疑・応行 The course is intended for stud science and engineering. It is also aimed for students to a and technical discussion and writi	する最先端の技術 答できる能力を養う lents to study bas acquire various ski ng.	情報(特に英語によ う。 sic materials in dep Ils, required in gene	る最先端の技術情 th, related to his/ ral research work, s	報)を発見する能力 her research subje such as those for o	」、ならびに、その acts in computer oral presentation,		
教員は技術情報の内容の発見、 While specific contents depend of relevant textbooks/research pape Self Preparation and Review 教員が指定する内容に関し、予習 Consult with your advisor. Related subjects 指導教員に問い合わせること。 Consult with your advisor.	#K いずに ス 品 に み る 理解、説明、質疑・J on the research a ers and report on t	応答する方法につい reas students are i hem, as well as to p	rc直接指導を行う。 nvolved in, it is usu resent and discuss o	ually the case for on the research wo	students to read rk of their own.		
Notes for textbook 授業にて指定する。 Consult with your advisor. Notes for reference							
Goals to be achieved (1)最先端の専門分野の英文が (2)技術的な情報を扱う英文が解 (3)論文の標準的な構成ができる (4)発表というスタイルでの情報 (5)情報の不足を質問という形式 (1) To understand English literatu (2) To interpret technical informa (3) To make a standard construct (4) To provide information by oral (5) To point out the lack of inform	理解でき、わかりや 釈でき、作文できる。 それ摘できる。 で指摘できる。 re on state-of-the tion written in Engl ion of a technical p presentation. nation by questions	マすく説明できる。 る。 art areas of expert lish, and to write suc paper. s.	ise, and to explain c th information in En	ilearly. glish.			
Evaluation of achievement 技術情報の発見に向けた自主性 導教員が判定する。 Will be evaluated by taking into a	、技術情報の理解 accout various fac	程、説明の方法、智	間への回答、議論 s technical explana	への参加の様子等 tion, question ansv	そから総合的に指 vering, discussion		

Examination 試験期間中には何も行わない None during exam period

Details of examination

試験期間中には何も行わない Non during exam period

Other information

指導教員に問い合わせること。 Consult with your advisor.

Reference URL

Office hours

指導教員に問い合わせること。 Consult with your advisor.

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

(C2) Have the skills to learn, by experience, methodologies for research and development through integrating extensive knowledge about computer science and engineering 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

(M43610030)Thesis Research on Computer Science and Engineering[Thesis Research on Computer Science and Engineering]

Subject name[English]	Thesis Research on Computer Science and Engineering[Thesis Research on Comput						
	Science and Engineering						
Schedule number	M43610030	Subject area		Advanced	Required or	Required	
				Computer	elective		
				Science and			
				Engineering			
Time of starting a course	2Years	Day of	the	Intensive	Credit(s)	6	
		week,perio	d				
Faculty	Graduate Progra	m for Master's	s Degre	e	Subject grade	1~1	
Department Offered	Computer Scien	ce and Engine	ering		Beggining	M1	
					grade		
Charge teacher name[Roman	S3系教務委員,	3系各教員,	S3系	教務委員-23kei k	kyomu Iin-S, 3kei	kakukyouin, 3kei	
alphabet mark]	kyomu Iin-S2						
Numbering	CMP_MAS61015						
Objectives of class							
The equires is intended for stude	nta ta faatar thair	intoracta in re	aaarak	nroblomo on comp	utor opionoo and a	nginaaring and to	
The course is intended for studen		interests in re	searcr	i problems on comp	uter science and e	ingineering and to	
acquire ability for independent sti	Jdies.						
It is also aimed for students to ac	quire, through the	sis research,	cooper	ativeness, a sense c	of responsibility, ab	lities for problem	
solving, research planning, decisio	on making, outcom	e presentation	and s	ubject investigation,	and to enhance the	neir creativity and	
persistency, among others.							
Contents of class							
It is usually the case that thesis i	research is carried	l out on individ	dual ba	ses with specific co	ntents differing fro	m one student to	
another							
Consult with your advisor for any	further details						
Consult with your advisor for any							
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.						
Nicker from former							
Notes for reference							
Goals to be achieved							
To acquire abilities for doing research and development at technically high level, sophisticated decision making, and leading							
large scale research projects.							
Evaluation of achievement							
Three faculty members will be assigned to prepare the evaluation for your thesis research, based on publication records							
master thesis, and oral presentation. It will be then finalized by the faculty meeting.							
Examination							
איאראין איז אראי אין איז איז אין איז							
Other information							
Reference URL							
UTTICE hours							

Relations to attainment objectives of learning and education

(M43610030)Thesis Research on Computer Science and Engineering[Thesis Research on Computer Science and Engineering]

Subject name[English]	Thesis Research on Computer Science and Engineering[Thesis Research on Computer						
	Science and Engineering]						
Schedule number	M43610030	Subject area	Advanced	Required or	Required		
			Computer	elective			
			Science and				
	0 (Engineering	0			
lime of starting a course	ZYears	Day of the	Intensive	Gredit(s)	6		
Faculty	Graduate Program	for Master's Degre		Subject grade	1~1		
Department Offered	Computer Science	e and Engineering		Beggining	M1. M2		
				grade	,		
Charge teacher name[Roman	S3系教務委員, 3	3系各教員 3kei kyor	mu 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 o	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.							
Evaluation of achievement							
Three faculty members will be assigned to prepare the evaluation for your thesis research, based on publication records,							
master thesis, and oral presentation. It will be then finalized by the faculty meeting.							
試験期間中には何も行わない							
None during exam period							
Other information							
Reference URL							
Office hours							
Relations to attainment objective	s of learning and e	ducation					
	-						

(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

(M4361003T)Thesis Research on Computer Science and Engineering[Thesis Research on Computer Science and Engineering]

Subject name[English]	Thesis Research on Computer Science and Engineering[Thesis Research on Computer							
Sahadula numbar	Science and Engineering M4261002T Subject area		A dy come a d	Beguined on	De autine d			
Schedule humber	M43010031	Subject area	Computer	elective	Required			
			Science and	ciccurc				
			Engineering					
Time of starting a course	Year	Day of the	Intensive	Credit(s)	6			
Foouthy	Graduate Program	week,period		Subject grade	2~2			
Department Offered	Computer Science	e and Engineering	56	Beggining	M1			
				grade				
Charge teacher name[Roman	S3系教務委員, 3系各教員 3kei kyomu Iin-S, 3kei kakukyouin							
alphabet mark]								
Numbering	CMP_MAS61015							
Objectives of class								
The course is intended for stud	dents to study bas	ic materials in dep	oth, related to his/	her research subje	ects in computer			
It is also aimed for students to	acquire various skil	ls required in gene	ral research work	such as those for	oral presentation			
and technical discussion and writ	ing.	is, required in gene	Tai research work, a		oral presentation,			
Contents of class								
While specific contents depend	on the research ar	eas students are i	nvolved in, it is usu	ally the case for	students to read			
relevant textbooks/research pape	ers and report on th	nem, as well as to p	resent and discuss	on the research wo	ork of their own.			
Self Preparation and Review								
Consult with your advisor.								
Natao far taxthook								
Consult with your advisor								
Notes for reference								
Goals to be achieved								
To acquire abilities for technical	readings in English,	logical thinking/exp	lanation, and clear p	presentation.				
Evaluation of achievement								
Will be evaluated by taking into	accout various fact	ors overall, such a	s technical explana	tion, question ansv	vering, discussion			
involvements and so on.								
Examination 計除期間内には何も行われい								
武殿舟间中には何つ1117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 glob	al success							
Have the communication skills t	o effectively expre	ss one's own idea	is and results while	working on the is	ssues 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

(M43610040)Seminar on Computer Science and Engineering[Seminar on Computer Science and Engineering]

Cubicat name[Endlah]				-				
Subject name[English]	Seminar on Co	mputer Scie	nce a	nd Engineering[Se	minar on Comput	er Science and		
	Engineering]							
Schedule number	M43610040	Subject are	a	Advanced	Required or	Required		
				Computer	elective			
				Science and				
				Engineering				
Time of starting a course	Vear	Day of	the	Intencive	Credit(e)	6		
Time of starting a course	i cai	Day U	- UIO -	Incensive	Ulbuil(8)	0		
	0 1 1 0	week,period				•		
Faculty	Graduate Program	n for Master's	s Degre	e	Subject grade	2~		
Department Offered	Computer Scienc	e and Enginee	ering		Beggining	M1		
					grade			
Charge teacher name[Roman	S3系教務委員 3	kei kyomu Iin	-S					
alphabet mark]								
Numbering	CMP_MAS61015							
Objectives of class								
冬研空気が指定する情報学に関	する最失端の技術	情報(性に本	ヨニート	ス是失端の技術情	叝)た発目する能 ナ	1 からびに その		
	9 の取几端の12門 ダズモスセムナ美ス		ы)- <i>Ф</i>		+12/ こ 元 9 つ HE /.			
技術情報を理解、説明、員疑•心	合じさる能力を変つ)						
The course is intended for stud	dents to study bas	sic materials	in dep	oth, related to his/	her research subje	ects in computer		
science and engineering.								
It is also aimed for students to	acquire various skil	lls, required ir	n gene	ral research work,	such as those for o	oral presentation,		
and technical discussion and writ	ing.							
Contonto of class								
Contents of class			****					
教員が指定する最先端の技術情	報(特に英語による	の最先端の技術	祈 情報)について理解した	ところを記明する。			
教員は技術情報の内容の発見、	理解、説明、質疑・)	応答する方法	につい	て直接指導を行う。				
While specific contents depend	on the research a	reas students	s are i	nvolved in, it is us	ually the case for	students to read		
relevant textbooks/research pap	ers and report on t	hem, as well a	as to p	resent and discuss	on the research wo	ork of their own.		
Self Preparation and Review								
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試験期間中には何も行わない

None during exam period

Details of examination 課題レポートやプレゼンテーションに基づいて評価する。 Your supervisor will evaluate your presentation and your reports. **Other information**

Reference URL

Office hours

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

(C2) Have the skills to learn, by experience, methodologies for research and development through integrating extensive knowledge about computer science and engineering 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

(M43630200)Advanced Topics in Brain and Cognitive Sciences[Advanced Topics in Brain and Cognitive Sciences]

Subject name[English]	Advanced Topics in Brain and Co	gnitive Sciences[Advanced Topics in	Brain and Cogr	nitive Sciences]
Schedule number	M43630200	Subject area	Advanced Computer Science and Engineering	Required or elective	Elective
Time of starting a course	Fall term	Day of the week,period	Tue.5~5	Credit(s)	2
Faculty	Graduate Program for Master's De	Subject grade	1~		
Department Offered	Computer Science and Engineerin	Beggining grade	M1		
Charge teacher name[Roman alphabet mark]	北崎 充晃, 中内 茂樹 KITAZAKI	Michiteru, NAKA	AUCHI Shigeki		
Numbering	CMP_MAS53025				

Objectives of class

To understand brain and neural system functioning underlying the excellence of human information processing such as perception, learning, and memory. To learn methods of measurement based on engineering approaches and data analysis. To understand what is "human" based on deep insights gained from the study.

Contents of class

The current findings on the excellence of human information processing in perception, learning, and memory are explained and methodologies are introduced to investigate the brain using a new approach combining physiology and engineering to realize technological applications. The lectures include various demonstrations and discussions about the latest findings on neural activities and perceptual phenomena.

- Lecture Schedule:
- 1. Introduction
- 2. Questions and research methodology
- 3-4. Sensation and psychophysics
- 5-6. Basics in perception
- 7–8. Depth perception
- 9-10. Motion perception
- 11. Mid-level vision (surface and objects)
- 12. High-level vision (Attention and consciousness)
- 13-14. Virtual reality

15. Discussion

Self Preparation and Review

Read the documents provided before each lecture. Review the lectures in consultation with the references and other resources such as the Internet.

Related subjects

Notes for textbook

Documents (slides) will be provided via web before commencement of the lectures.

Reference1	Book title	Cognitive Neurosci	ence; Fourth Inte	ISBN	978-	
		edition			0393922288	
	Author	Michael S.	Publisher	Publish	2008	
		Gazzaniga		Company	year	
Reference2	Book title	イラストレクチャー言	忍知神経科学	ISBN	978-	
					4274208225	
	Author	村上郁也 編著	Publisher	Publish	2010	
				year		

Notes for reference

Goals to be achieved

To be able to explain the differences between traditional information processing and human information processing To be able to discuss research concepts based on cognitive neurosciences, which will replace current technologies

To be able to discuss human-machine symbiosis

Evaluation of achievement

Grades will be based on theme reports from each lecture (50%) and the final report (50%)

S: 90 points or higher (out of 100)

A: 80 points or higher (out of 100)

B: 70 points or higher (out of 100)

C: 60 points or higher (out of 100)

Examination

レポートで実施

By Report

Details of examination

Other information

Reference URL

Office hours

Contact by e-mail

Relations to attainment objectives of learning and education

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Key words

cognitive neurosciences, perception
(M43630260)Advanced	Robotics and I	informatics 1[Advand	ced Robotics and	Informatics 1]							
Subject	Advanced Ro	obotics and Informat	ics 1[Advanced R	obotics and Informa	itics 1]						
name[English]			1	1	1						
Schedule number	M43630260	VI4303UZ0U Subject area Advanced Required or Elective									
				Computer Science and	elective						
				Engineering							
Time of starting a	Fall1 term		Day of the	Tue.3~3	Credit(s)	1					
course			week,period								
Faculty	Graduate Pro	ogram for Master's D	Degree		Subject	1~					
					grade	N41					
Department Offered	Computer So	cience and Engineeri	ng		Beggining	MI					
Charge teacher	三浦 絊 Mīl	JRA Jun			BIAUO						
name[Roman											
alphabet mark]											
Numbering	CMP_MAS53	225									
Objectives of class											
Fundamental and adva	nced issues in	n intelligent robotics	s will be discusse	ed. Topics included	are probabilist	ic sensor fusion					
techniques (e.g., Kalmar	n filter and part	ticle filter) and its ap	plication to mobil	e robot localization	and mapping.						
Contents of class											
Week 1: Introduction to	scene recogni	tion and sensor fusio	on.								
Week 2: Probability basi	ic and Bayes fi	lter.									
Week 3: Kalman filter an	id its extension	ns.									
Week 5: Mobile robot lo	calization										
Week 6: Mobile robot m	apping.										
Week 7: SLAM (Simulta	neous Localiza	tion and Mapping).									
Week 8: Presentations	of students' rep	ports and conclusion	IS.								
Self Preparation and Re	eview										
Related subjects											
Fundamental knowledge	of linear algeb	ora and probability th	neory is useful.								
Notes for textbook											
Handouts will be prepar	ed. The main r	eference is shown b	elow.								
		<u> </u>									
Reference 1	Book title	Probabilistic Robo	tics		ISBN	978-					
	Author	S Thrup W	Publicher	The MIT Press	Publich veer	2005					
	Autor	Burgard, D. Fox		1110 1011 1 1033	i ubiliti yeal	2000					
Notes for reference	1										
Goals to be achieved											
Understanding of the fu	ndamentals of	sensor fusion strate	gies and algorithn	ns.							
Evaluation of achievem	ent										
Th grade will be determ	ined by the fin	al presentation and t	the report.								
Examination											
レポートで実施											
By Report											
Details of examination											
Other information			、								
Room C-604, Ext. 6773	, Email: jun.miu	ra@tut.jp (Jun Miura))								
Reference URL											
http://www.aisl.cs.tut.a	c.jp/classes/rc	botics-and-informat	tics/								

ID and password will be given at the class.

Office hours

Make an appointment beforehand by email.

Relations to attainment objectives of learning and education

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(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

Robotics

(M43630290)Web Data Engineering 2[Web Data Engineering 2]

	B 2LIVOD Data Lingi				
Subject name[English]	web Data Enginee	ering ZLWeb Data En	gineering 2	.	E 1
Schedule number	M43630290	Subject area	Advanced	Required or	Elective
			Computer	elective	
			Science and		
			Engineering		
Time of starting a course	Fall1 term	Day of the	Mon.5~5	Credit(s)	1
		week,period			
Faculty	Graduate Program	n for Master's Degre	e	Subject grade	1~
Department Offered	Computer Science	e and Engineering		Beggining	M1
-				grade	
Charge teacher name[Roman	栗山 繁 KURIYA	MA Shigeru			
alphabet mark]					
Numbering	CMP MAS52425				
Objectives of class					
本講義では、大規模または多次方 特徴を分析しながら可視化機構を	元のデータを効率的 自らデザインしてフ	つかつ効果的に表示 プログラム化する制作	する可視化の設計: F実習によって、実践 coole by officiantly	手法を講述し、対象 ものな応用開発力を	マデータの性質や と習得する。
This class teaches design metho	dology of developin			and enectively vist	ializing nuge size
or dimension of a dataset. Practic	al skill of developin	ig visualization tools	is learned by the p	ractice of actual pr	ogramming.
Contents of class					
第1週目:情報可視化の導入と概	要説明				
第2週目:可視化 API とグラフ描画	画演習				
第3週目:相関の可視化(多変量・	デ ータ)				
第4週目:構造の可視化(階層・オ	(構造)				
第5週目:関係の可視化(グラフ・	ネットワーク)				
第6週目・テキストと変動の可視(と対話的操作				
第7+05调目·課題制作					
Week 1. Introduction and overview Week 2. API for drawing diagram	v of information vis	ualization			
Week 3. Correlation visualization	of multivariate data				
Week 4. Relation visualization with	n hierarchical and n	etwork representati	on		
Week 5. Visualization of relation (graph and network)				
Week 6. Visualization of textual in	formation and time	-variation			
Week 7+0.5. An exercise of develo	oping a visualization	n tool			
Colf Drop protion and Devices					
Sen Freparation and Keview ス羽、復羽のために スムナーー	進業にも 中心 し 羽を		での = - 、 ど、	.7=//	公明士 7
ア首・侵省のために、それまでに	ັ 再我し7こ内谷と翌遁	回い講義内谷を Web	でいe-フーニンクシ	バステム(Moodle)で	公開りる。
A digital textbook is freely supplie	ed on e-learning sys	stem developed on N	Noodle.		
Related subjects					
数値解析、多変量解析、データマ	イニング・可視化特	論I			
Numerical analysis, Multivariate a	nalysis, Advanced D	Data Mining and Visu	alization 1		
Notes for textbook					
e-ラーニングシステム(Moodle)に	公開する電子テキ	ストを使用する.			
A digital textbook is supplied on a	in E-learning syster	m of Moodle.			
Notes for reference					
Goals to be achieved					
	かつ効果的に可知	貝化するデザイン毛	まを理解 与っこっ	れたデータの性質な	を老店して最適た
ハパス、シヘルのノーノで効率の 可相化のプログラムを制作できる	1.2 フルネロコンリカ 技能を翌得する		ムニュアトロ、テルワイ		「う慮して取迴な
	JXHEで日付りの h decimp methodala	my of the vieweli+	ion overam for aff	ciently and official	aly vicualize the
hugo pizo of multi-dimensional de	n design metriodolo	by or the visualizat	ion system for emp	GIERRING AND ENECTIV	ciy visualize trie
nuge size of multi-dimensional da	lasels.				
	L. 1				
甲間レホート 20 点, 出席 20 点,	およひ制作課題 60	京の合計 100 点で	米点する。		
S:達成目標をすべて達成してお	り、かつ中間レポー	-ト, 出席, および制	作課題の合計点(10	00 点満点)が 90 点	以上
A:達成目標をすべて達成してお	り,かつ中間レポー	-ト, 出席, および制	作課題の合計点(10	00 点満点)が 80 点	以上
B:達成目標を80%達成しており	J, かつ中間レポート	ト,出席,および制作	課題の合計点(100) 点満点)が 70 点り	以上
C:達成目標を 60%達成しており	<u>丿, かつ中間レポー</u>	ト, 出席, および制作	課題の合計点(100) 点満点) が 60 点り	以上

中間レポート 20 点, 出席 20 点, および制作課題 60 点の合計 100 点で採点する。

S:達成目標をすべて達成しており,かつ中間レポート,出席,および制作課題の合計点(100 点満点)が 90 点以上 A:達成目標をすべて達成しており,かつ中間レポート,出席,および制作課題の合計点(100 点満点)が 80 点以上 B:達成目標を 80%達成しており,かつ中間レポート,出席,および制作課題の合計点(100 点満点)が 70 点以上 C:達成目標を 60%達成しており,かつ中間レポート,出席,および制作課題の合計点(100 点満点)が 60 点以上

Examination レポートで実施

By Report

Details of examination

制作課題の発表会を試験期間中に実施する.

Presentation of final exercise is carried out within the period of a regular exam. **Other information**

Reference URL

Office hours

随時だが、電子メールで予約をとること。 Anytime, but requires a reservation by E-mail.

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

情報検索、情報可視化、ビジュアル情報処理

Information visualization, Visual data mining, Visual information processing

(M43630300)Complex Systems and Intelligent Informatics 1[Complex Systems and Intelligent Informatics 1]

Subject name[English]	Complex Systems and Intelligent Informatics 1 [Complex Systems and Intelligent Informatics								
	1]								
Schedule number	M43630300	Subject area	Advanced	Required or	Elective				
			Computer	elective					
			Science and						
	_		Engineering	a m (x)					
Time of starting a course	Fall1 term	Day of the	Wed.3~3	Credit(s)	1				
Faculty	Graduate Program	n for Master's Degre	20	Subject grade	1~				
Department Offered	Computer Scienc	e and Engineering		Beggining	М1				
				grade					
Charge teacher name[Roman	村越 一支 MURA	KOSHI Kazushi							
alphabet mark]									
Numbering	CMP_MAS53125								
Objectives of class									
The aim of this class is to unders	tand complex and i	ntelligent systems.							
To achieve the aim, this class off	ers knowledge and	skills for mathemation	cal modeling and sin	nulation methods.					
Contents of class									
A. Introduction									
What is complex and intelligent sy	stems? Outline of	the brain system.							
B. Computational Neuroscience a	nd Application-orie	ented Mathematical	Models						
What is computational Neuroscier	ice and artificial ne	ural networks?							
C. Model Neurons	adal naurana								
D Learning at connected part of									
Synantic plasticity spike-timing-	dependent plasticity								
E Simulation Methods									
Numerical calculation methods for	r single neuron, neu	ıral network from sir	ngle neuron						
F. Simulation Environments			Bio from one						
Explanation and demonstration of	simulation environ	ments such as NEU	RON and GENESIS.						
G. Self-organizing									
What is self-organizing? Winner T	akes All, Self-orgar	nizing map (SOM)							
H. Reinforcement Learning									
What is reinforcement learning,	reinforcement lear	ning in the brain, d	emonstration of re	inforcement learnii	ng for controlling				
robot									
I. Summary									
1st week: A									
2nd week: B									
3rd week: C									
4th week: D									
Sth week: E F									
7th week: H I									
Self Preparation and Review									
Palated subjects									
Natao fay tauth1-									
Hondouto are distributed									
Haridouts are distributed.									
Notoo for reference									
NOTES TOF FETERENCE									
Gaala to be achieved									
- Know complex and intelligent	athematical model	and understand th	and the degrees	which you can aire	Ite them by your				
- Mow complex and intelligent m	autematical models	s, and understand th	iem at the degree v	which you can simu	aite them by your				
programming or by using simulation	m 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

Examination 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

http://www.ci.cs.tut.ac.jp/~mura/

Office hours

After this class

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

(M43630310)Complex Systems and Intelligent Informatics 2[Complex Systems and Intelligent Informatics 2]

Subject name[English]	Complex Systems and Intelligent Informatics 2[Complex Systems and Intelligent Informatics 2]							
Schedule number	M43630310	Subject area		Advanced Computer Science and Engineering	Required or elective	Elective		
Time of starting a course	Fall2 term	Day of week,period	the I	Wed.3~3	Credit(s)	1		
Faculty	Graduate Program	n for Master's	Degr	ee	Subject grade	1~		
Department Offered	Computer Scienc	e and Enginee	ering		Beggining grade	M1		
Charge teacher name[Roman alphabet mark]	石田 好輝 ISHIDA Yoshiteru							
Numbering	CMP_MAS53125							
Objectives of class								
This course provides opportunitie	s to learn the follow	wings:						
* Modeling and analysis on compl	ex systems and lea	rning systems	5,					
* System theoretic analysis on co	omplex systems and	d learning sys	tems ,					
* Computer simulations and implie	cations, and							
* Implementation of complex syst	ems and learning s	ystems.						
Recent topics on complex system	is and learning syst	ems will be al	so dis	cussed in the cours	e.			
Contents of class								
1 Introduction on complex dynam	ical systems							
2. Dynamical systems								
3. Complex networks and interact	ions							
4. Cellular automata and neural ne	etworks							
5. Information Processing by com	plex systems							
6. Emergence of cooperation in a	utonomous agents							
7. Learning algorithms for agents								
8. Evolutionary algorithms for age	nts							
9. Biological systems and information	tion processing							
Self Preparation and Review								
Related subjects								
Notes for textbook								
No textbook References other th	an helow will he su	ggested at th	e first	class				
Ishida, Y.: Self-Repair Networks, S	Springer (2015):	8800000 00 00						
Ishida, Y.: Immunity-Based Syster	ns. Springer (2004)	:						
Barabasi, A.L.: Linked, Perseus, (2	.002)							
Strogatz, S. H. Sync, Hyperion (2	003)							
Notes for reference								
Goals to be achieved								
Evaluation of achievement								
Class performance (50%) and term	n-end report (50%)							
Examination								
その他								
Other								
Details of examination								
Other information								
Room F-504, Ext. 6895								
Reference URL								

Office hours Wednesday 16:30-17:00

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

complex systems, cellular automaton, artificial life, immuno intelligence, neural networks, evolutionary game theory

(M43630370)Image Processing, Advanced 1[Image Processing, Advanced 1]

Subject name[English]	Image Proces	ssing, Advanced 1[Ima	ge Processing, A	dvanced 1]		
Schedule number	M43630370		Subject area	Advanced	Required or	Elective
				Computer	elective	
				Science and		
				Engineering		
Time of starting a course	Fall1 term		Day of the week.period	Tue.2~2	Credit(s)	1
Faculty	Graduate Pro	ogram for Master's De	gree		Subject grade	1~
Department Offered	Computer Sc	ience and Engineering	r		Beggining	M1
Boparanone onorou	Computer et		,		grade	
Charge teacher	金澤 靖 KAN	AZAWA Yasushi			8.000	
name[Roman alphabet						
mark]						
Numbering	CMP MAS52	525				
Objectives of class	_					
This course involves fur	ndamentals and	advanced issues on i	mage processing	and computer vision		
			mage processing			
This course involves fur	idamentals and	advanced issues on it	mage processing	and computer vision		
Contents of class						
1: Introduction						
2: Projective Geometry						
3: Epipolar Geometry						
4: 3-D Reconstruction f	rom Two Views	3				
5: Affine Projection						
6: Uncalibrated Stereo						
7: Structure from Motion	n					
8: Experiments						
1: Introduction						
2: Projective Geometry						
3: Epipolar Geometry						
4: 3-D Reconstruction f	rom Two Views	6				
5: Affine Projection						
6: Uncalibrated Stereo						
7: Structure from Motion	n					
8: Experiments						
Self Preparation and Re	view					
The handouts are availa	ble via web pag	ge beforehand.				
The handouts are availa	ble via web pag	ge beforehand.				
Related subjects						
Geometry, Linear Algebr	ra, Statistics.					
Geometry, Linear Algebr	ra, Statistics.					
Notes for textbook						
Handouts will be prepare	ed.					
Handouts will be prepare	ed.	1				1
Reference1	Book title	Multiple View Geom	etry		ISBN	
	Author	R.I. Hartley and A.	Publisher	Cambridge	Publish year	2000
		Zisserman		University Press		
Reference2	Book title	Computer Vision	A Modern Appro	bach	ISBN	
	Author	D.A. Forsyth and	Publisher	Prentice Hall	Publish vear	2003
		J. Ponce			,	
Reference3	Book title	Guide to 3D Vision	Computation	1	ISBN	
	Author	K Kanal i M	Dublish	Carrie and	Detailet	2016
	Author	r. ranatani, Y.	rudiisher	opringer	rudiish year	2010
		Sugaya, and Y.				
		nanazawa				

Notes for reference

Geals to be solvered Understanding of the fundamentals and advanced issues on image processing and computer vision including: - espicial geometry. - application - optimization Understanding of the fundamentals and advanced issues on image processing and computer vision including: - camera model, - application	
Understanding of the fundamentals and advanced issues on image processing and computer vision including: - camera model, - epipolar geometry, - apbolar	Goals to be achieved
- camera model. - explore a model. - solution of the fundamentals and advanced issues on image processing and computer vision including: - camera model. - explorar spoontry. - 3-D reconstruction from images. - optimization - optimization - explorar spoontry. - 3-D reconstruction from images. - optimization - exploration of schlovement Grade will be determined by all submitted reports: - score > 90 - score > 100 - crade will be determined by all submitted reports: - score > 100 - crade will be determined by all submitted reports: - score > 100 - crade will be determined by all submitted reports: - score > 100 - crade will be determined by all submitted reports: - score > 100 - s	Understanding of the fundamentals and advanced issues on image processing and computer vision including:
 - epipolar geometry. 3-D reconstruction from images, - optimization Understanding of the fundamentals and advanced issues on image processing and computer vision including: - camera model, - epipolar geometry. 3-D reconstruction from images, - optimization Evaluation of achievement Grade will be determined by all submitted reports: S: score >= 90 A: score >= 80 B: score >= 70 C: score >= 80 B: score >= 70 C: score >= 80 B: score >= 70 C: score >= 60 Examination Urf - で実施 By Report Details of scamination Other information Reference URL http://www.img.es.tut.ac.jp / Yasushi Kanazawa) Reference URL http://www.img.es.tut.ac.jp / http://www.img.es.tut.ac.jp	camera model.
- 3-D reconstruction from images. - optimization Understanding of the fundamentals and advanced issues on image processing and computer vision including: - camera model. - appear geometry. - 3-D reconstruction from images. - optimization Evaluation of chivement Grade will be determined by all submitted reports: S: score > = 80 A: score > = 80 A: score > = 80 Grade will be determined by all submitted reports: S: score > = 80 A: score > = 80 A: score > = 80 A: score > = 80 B: score > = 80 D: score > = 80 B:	– epipolar geometry,
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Understanding of the fundamentals and advanced issues on image processing and computer vision including: - camera model, - epipolar geometry, 3 -D reconstruction from images, - optimization Evaluation of achievement Grade will be determined by all submitted reports: S: score > = 90 A: score > = 80 B: score > = 70 C: score > = 60 Grade will be determined by all submitted reports: S: score > = 80 A: score > = 80 B: score > = 70 C: score > = 80 B: score > = 70 C: score > = 0 A: score > = 80 B: score > = 70 C: score > = 60 Examination Urd + rf: स्ट्रॉ. Details of examination Details of examination Other information Room F-404, Ext. 6888, Email: kanazawa@cs.tut.ac.jp (Yasushi Kanazawa) Room F-404, Ext. 6888, Email: kanazawa@cs.tut.ac.jp (Yasushi Kanazawa) Room F-404, Ext. 6888, Email: kanazawa@cs.tut.ac.jp (Yasushi Kanazawa) Reference URL http://www.img.cs.tut.ac.jp/ http://www.img.cs.tut.ac.jp/ Mttp://www.img.cs.tut.ac.jp/ Mttp://www.img.cs.tut.ac.jp/ Office hours 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 Have advanced knowledge about computer science and engineering as well as related fields; and have the practical and creative skills to utilize such knowledge in an integrated manner (0) Practical and creative skills to utilize advanced knowledge about computer science and engineering as well as related fields; and to utilize such knowledge in an integrated manner (2) Have the skills to utilize such knowledge in an integrated manner (2) Have the skills to utilize such knowledge in an integrated manner (3) Have the skills to utilize such knowledge in an integrated manner (4) Have the skills to utilize such knowledge in an integrated manner (4) Have the skills to utilize such knowledge in an integrated manner (4) Have the ski	
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Grade min be determined by an submitted reports: S: score >= 50 A: score >= 60 Grade will be determined by all submitted reports: S: score >= 70 C: score >= 60 E: score >= 70 C: score >= 70 Details of examination U:ポートで実施 By Report Details of examination COter information Room F-404, Ext. 6888, Email: kanazawa@cs.tut.ac.jp (Yasushi Kanazawa) Room F-404, Ext. 6888, Email: kanazawa@cs.tut.ac.jp (Yasushi Kanazawa) Room F-404, Ext. 6888, Email: kanazawa@cs.tut.ac.jp (Yasushi Kanazawa) Reference URL http://www.img.cs.tut.ac.jp/ http://www.img.cs.tut.ac.jp/ Office hours 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 Have advanced knowledge about computer science and engineering as well as related fields; and have the practical and creative skills to utilize such knowledge in an integrated manner (C1) Have the skills to utilize such knowledge in an integrated manner (C1) Have the skills to utilize such knowledge in an integrated manner (C1) Have the skills to utilize such knowledge in an integrated manner (C1) Have the skills to utilize such knowledge in an integrated manner (C1) Have the skills to utilize such knowledge in an integrated manner (C2) Have the skills to utilize such knowledge in an integrated manner (C3) Have the skills to utilize such knowledge in an integrated manner	Crade will be determined by all submitted reports:
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Reference3 Book title Gonget Vision A Modern Approach ISBN Cambridge University Press Cambridge Cambri	5: Advance of Least Sou	lares						
Bit Mutter Likelihood 8: Examination Self Preparation and Review Self Preparation and Review The handouts are available via web page beforehand. The handouts are available via web page beforehand. Related subjects Geometry, Linear Algebra, Statistics. Geometry, Linear Algebra, Statistics. Geometry, Linear Algebra, Statistics. Geometry, Linear Algebra, Statistics. Motes for textbook Handouts will be prepared. Handouts will be prepared. Reference1 Book title Multiple View Geometry ISBN Image: Second Seco	6: Non-linear Optimizati	on						
B: Examination Self Preparation and Review The handouts are available via web page beforehand. The handouts are available via web page beforehand. The handouts are available via web page beforehand. Related subjects Geometry, Linear Algebra, Statistics. Geometry, Linear Algebra, Statistics. Geometry, Linear Algebra, Statistics. Geometry, Linear Algebra, Statistics. Motes for textbook Handouts will be prepared. Reference1 Book title Multiple View Geometry. ISBN Reference2 Book title Muthor R.I. Hartley and A. Zisserman Publisher Cambridge University Press 2000 Reference3 Book title Computer Vision A Modern Approach Reference3 Book title Guide to 3D Vision Computation Reference3 Book title Guide to 3D Vision Computation Reference3 Book title Guide to 3D Vision Computation K. Kanatani, Y. Kanazawa Publisher Springer Publish year 2016	7: Maximum Likelihood							
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Related subjects Geometry, Linear Algebra, Statistics. Geometry, Linear Algebra, Statistics. Notes for textbook Handouts will be prepared. Handouts will be prepared. Handouts will be prepared. Reference1 Book title Multiple View Geometry. Reference2 Book title Multiple View Geometry. Reference2 Book title Multiple View Geometry. Reference3 Book title Computer Vision A Modern Approx-h ISBN Reference3 Book title Guide to 3D Vision Computation Prentice Hall Publish year 2003 Reference3 Book title Guide to 3D Vision Computation ISBN 2003 Reference3 Book title Guide to 3D Vision Computation Springer Publish year 2016	The handouts are availa	ble via web pag	re beforehand.					
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Geometry, Linear Algebra, Statistics. Notes for textbook Handouts will be prepared. Handouts will be prepared. Reference1 Book title Multiple View Geometry ISBN 2000 Reference2 Book title Multiple View Geometry Cambridge University Press Publish year 2000 Reference2 Book title Computer Vision A Modern Approach ISBN 2003 Reference3 Book title Guide to 3D Vision Computation Prentice Hall Publish year 2003 Reference3 Book title Guide to 3D Vision Computation ISBN 2003 Reference3 Book title Guide to 3D Vision Computation Springer Publish year 2016	Geometry, Linear Algebr	ra. Statistics.						
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Reference1 Book title Multiple View Geometry ISBN Author R.I. Hartley and A. Zisserman Publisher Cambridge University Press Publish year 2000 Reference2 Book title Computer Vision A Modern Approach ISBN 2003 Reference3 Book title Guide to 3D Vision Computation Prentice Hall Publish year 2003 Reference3 Book title Guide to 3D Vision Computation ISBN 2003 Reference3 K. Kanatani, Y. Sugaya, and Y. Kanazawa Publisher Springer Publish year 2016	Handouts will be prepare	ed.						
Author R.I. Hartley and A. Zisserman Publisher Cambridge University Press Publish year 2000 Reference2 Book title Computer Vision A Modern Approach ISBN Author D.A. Forsyth and J. Ponce Publisher Prentice Hall Publish year 2003 Reference3 Book title Guide to 3D Vision Computation Publisher Springer Publish year 2016 Reference3 Book title Guide to 3D Vision Computation Springer Publish year 2016	Reference1	Book title	Multiple View Geom	netrv			ISBN	
Reference2 Book title Computer Vision A Modern Approach ISBN Reference3 Book title Guide to 3D Vision Computation Prentice Hall Publish year 2003 Reference3 Book title Guide to 3D Vision Computation Springer Publish year 2016 Reference3 K. Kanatani, Y. Sugaya, and Y. Kanazawa Publisher Springer Publish year 2016		Author	RI Hartley and A	- Dublisher		Cambridge	Publich your	2000
Reference2 Book title Computer Vision A Modern Approxh ISBN Author D.A. Forsyth and J. Ponce Publisher Prentice Hall Publish year 2003 Reference3 Book title Guide to 3D Vision Computation ISBN ISBN 2016 Author K. Kanatani, Y. Sugaya, and Y. Kanazawa Publisher Springer Publish year 2016			7isserman			University Press	i ubiisti yodf	2000
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Book title Guide to 3D Vision Computation ISBN Author K. Kanatani, Y. Sugaya, and Y. Kanazawa Publisher Springer Publish year 2016		Author	D.A. Forsyth and J. Ponce	Publisher		Prentice Hall	Publish year	2003
AuthorK. Kanatani, Y. Sugaya, and Y. KanazawaPublisherSpringerPublish year2016	Reference3	Book title	Guide to 3D Vision	Computation			ISBN	
Sugaya, and Y. Kanazawa		Author	K. Kanatani, Y.	Publisher		Springer	Publish year	2016
			Sugaya, and Y. Kanazawa					

Notes for reference

Goals to be achieved
Understanding of the fundamentals and advanced issues on image processing and computer vision including:
- camera model,
– epipolar geometry,
- 3-D reconstruction from images,
- optimization
Understanding of the fundamentals and advanced issues on image processing and computer vision including:
- camera model.
- epipolar geometry,
- 3-D reconstruction from images,
- optimization
Evaluation of achievement
Grade will be determined by all submitted reports:
S: score >= 90
A: score >= 80
B: score ≥= 70
C: score >= 60
Grade will be determined by all submitted reports:
S: score >= 90
A: score >= 80
B: score ≥= 70
C: score >= 60
Examination
レポートで実施
By Report
Details of examination
Other information
Room C−507, Ext. 6760, Email: sugaya@iim.cs.tut.ac.jp (Yasuyuki Sugaya)
Room C-507, Ext. 6760, Email: sugaya@iim.cs.tut.ac.jp (Yasuyuki Sugaya)
Reference URL
http://www.iim.cs.tut.ac.jp/~sugaya/lecture/e-image/
http://www.iim.cs.tut.ac.jp/~sugaya/lecture/e-image/
Office hours
Relations to attainment objectives of learning and education
(C) Practical and creative skills to utilize advanced knowledge in an integrated manner
nave advanced knowledge about computer science and engineering as well as related heids, and have the practical and
creative skins to utilize such knowledge for problem solving in an integrated manner
related fields; and to utilize such knowledge in an integrated manner
Key words
コンピュータビジョン、最適化手法
computer vision ontimization

(M43630390)Algorithm	Engineering, A	dvanced[Algorithm E	ngineering, Advar	nced]					
Subject	Subject Algorithm Engineering, Advanced[Algorithm Engineering, Advanced]								
name[English]									
Schedule number	M43630390		Subject area	Advanced	Required or	Elective			
				Computer	elective				
				Science and					
Time of starting o	E-III to me		Davis of the	Engineering		1			
lime of starting a	Fall I term		Day of the	Wed.4~4	Great(s)	1			
Faculty	Graduate Pr	ogram for Master's F			Subject	1~			
i douity					grade				
Department Offered	Computer So	cience and Engineeri	ng		Beggining	M1			
	-				grade				
Charge teacher	藤戸 敏弘 F	UJITO Toshihiro							
name[Roman									
alphabet mark]									
Numbering	CMP_MAS52	525							
Objectives of class									
離散最適化問題に対す	る数理計画的	手法,および効率的]アルゴリズムの言	設計方法を習得する	5.時間が許せは	ば, 計算困難(NP			
困難)な場合の対処法と	として、高精度	近似アルゴリズムの詞	設計方法を習得す	-る.					
To learn mathematical	programming a	pproaches for combi	inatorial optimizat	ion problems and h	ow to design ef	ficient algorithms			
for them. Designing hig	gh-performanc	e approximation algo	prithms for comp	utationally hard (NP	-hard) problem	s will be covered			
as well, if time permits.									
1. 離散最適化問題への	りイントロ								
2. シュタイナー不問題(の近似								
3. ISP とオイフー 闭路									
4. ISP と 集合									
5. 稼空計画法 6. 須刑計画の辺対歴									
0. 稼空計画の及対性) カ め 注								
	inatorial ontimi	zation problems							
2 Steiner Tree Approxi	mation								
3. TSP and Fulerian Cv	cles								
4. TSP and Set Cover									
5. Linear Programming									
6. Linear Programming [Duality								
7. (Randomized) Roundi	ng Linear Prog	rams							
Self Preparation and Re	eview								
ウェルカムページで事育	前に公開されて	いる講義計画・講義	用資料を参照して	て,予習・復習により	講義内容とその)理解を確認する			
こと.									
It is highly recommende	ed to go throu	gh the course mater	rials provided on	the course welcom	e pages for self	f preparation and			
reviews.									
Related subjects									
「アルゴリズムとデータ ^枚	構造」(「計算理 ″∵	!論」や「形式言語論」 ″	も履修しているこ	とが望ましい)					
"Algorithms and Data S	tructures" (to	the lesser extent, "	Theory of Compu	tation" and "Formal	Languages″ar	e also related).			
資料を配作りる。									
All the course materials	s used will be p	rovided through the	course home pag	es.					
	1	1				1			
Reference1	Book title	Approximation Alg	orithms	1	ISBN	3540653678			
	Author	Vijay V. Vazirani	Publisher	Springer	Publish year	2001			
Reference2	Book title	Combinatorial Op	timization: Exact	and Approximate	ISBN				
	Author	Luca Trevisan	Publisher		Publish year				
Notes for reference	I	1	1	1	1	1			
Coolo to be achieved									
Goals to be achieved									

離散最適化問題の構造解析や効率的解法設計のために,線形計画を中心として数理計画法によるモデル化や双対定理,最大 最小定理といった系統的手法を身につける.

To earn the ability of problem modelings, based on mathematical programmings (and LP in particular), and applying systematic approaches for structure analysis and algorithm designing for combinatorial optimization problems.

Evaluation of achievement

達成目標全体の達成を総合的に評価する定期試験(80%)およびレポート(20%)で評価する.

博士前期課程1年·博士後期課程1年/S:90点以上,A:80点以上、B:70点以上、C:60点以上

博士前期課程 2 年·博士後期課程 2,3 年/A:80 点以上、B:65 点以上、C:55 点以上

[Evaluation basis]

Students will be evaluated, in terms of goals to be achieved, based on total scores of exams (80%) and home works (20%) as follows:

For 1st year students in Master or Doctorate course,

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).

For 2nd (or higher) year students in Master or Doctorate course,

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

定期試験を実施(対面) Examination(Face to Face)

Details of examination

Other information

Reference URL

http://www.algo.cs.tut.ac.jp/~fujito/class/AlgEng/

http://www.algo.cs.tut.ac.jp/~fujito/class/AlgEng/

Office hours

随時(eメールにより事前にアポイントメントをとってください).

eメールによる質問も歓迎.

Arranged by appointment.

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

アルゴリズム 組合せ最適化 線形計画法 計算量 近似アルゴリズム

algorithms, combinatorial optimization, linear programming, computational complexity, approximation algorithms

(M44610020)Seminar on Environmental and Life Science II[Seminar on Environmental and Life Science II]

Subject name[English]	Seminar on Enviro	onmental	and	Life S	cience II[Seminar o	n Environmental an	d Life Science II]
Schedule number	M44610020	Subjec	t area	a	Advanced	Required or	Required
					Applied	elective	
				Chemistry and			
					Life Science		
Time of starting a course	Year	Day	of	the	Intensive	Credit(s)	3
		week,p	eriod				
Faculty	Graduate Progran	n for Mas	ster's	Degre	e	Subject grade	2~
Department Offered	Applied Chemistry	y and Life	e Scie	ence		Beggining	M2
						grade	
Charge teacher name[Roman	S4系教務委員 4	kei kyom	u Iin-	S			
alphabet mark							
Numbering	ENV_MAS65015						
Objectives of class							
Based on the Seminar on Enviro	nmental and Life S	cience I,	this o	course	e will further provid	e the students wit	h the opportunity
to study on his/her research sub	ject in environment	al and life	e scie	ences	by reading textbool	ks and papers unde	er the guidance of
his/her supervisor. The students	s will learn the kno	owledge	and t	the pr	resentation skills re	equired for his/her	r research in the
seminar.							
Contents of class							
The students will be required to	read textbooks and	papers v	writte	n by o	other language than	Japanese, especia	ally English, which
are suggested by his/her supervis	sor, and to report a	nd discus	ss de	eply o	n his/her research	subject in the semi	inar.
Self Preparation and Review							
Related subjects							
Seminar on Environmental and Lif	fe Science I						
Thesis Research on Environmenta	al and Life Science						
All other relevant subjects in Adv	anced Environment	al and Li	fe Sc	iences	8		
Notes for textbook							
Supervisor will recommend textbo	ooks, papers, and re	esearch m	nateri	als to	students.		
Notes for reference							
Goals to be achieved							
To acquire basic knowledge on er	vironmental and life	e science	es				
To understand the contents of so	ientific papers in a	given fie	ld of	enviro	nmental and life sc	ences	
To be able to make oral and post	er presentations rel	levant to	pape	rs he∕	/she has read.		
Evaluation of achievement							
The evaluation is based on the	scores of reading t	extbooks	s and	scien	tific papers, discus	sions, reports and	presentations of
his/her research in the seminar. I	His/her supervisor	evaluates	s the	score	S.		
A: 80 or higher (out of 100 points),						
B: 65 or higher (out of 100 points),						
C: 55 or higher (out of 100 points)						
武映朔间中には凹む1177ない							
Details of examination							
Oth on information							
Reference LIRI							
http://ens.tut.ac.in/en/							
Office hours							
Students are encouraged visiting	by appointment						
Relations to attainment objective	s of learning and e	ducation					

Key words

Environmental science and technology, life science, materials science and engineering, applied chemistry

(M44610050)Seminar on Applied Chemistry and Life Science 1[Seminar on Applied Chemistry and Life Science 1]

Subject name[English]	Subject name[English] Seminar on Applied Chemistry and Life Science 1[Seminar on Applied Chemistry and Science 1]								
Schedule number	M44610050	Subject	Subject area Advanced Applied Chemistry and		Required or elective	Required			
Time of starting a course	Year	Day o	of the riod	Intensive	Credit(s)	3			
Faculty	Graduate Program	m for Mast	er's Degr	ee	Subject grade	1~			
Department Offered	Applied Chemistr	y and Life	Science		Beggining	M1			
-		-			grade				
Charge teacher name[Roman alphabet mark]	S4系教務委員 4	kei kyomu	Iin-S						
Numbering	ENV_MAS55015								
Objectives of class	_								
This course will provide the stud	lents with opportu	nities to st	tudv on h	nis/her research su	biects on applied o	chemistry and life			
science by reading textbooks an	d scientific papers	under the	guidanc	e of his/her superv	visor. The aim of t	he lessen for the			
students is to learn knowledge an	d presentation skil	ls required	for his/h	er research in the s	seminar as well as	to deepen his/her			
understanding of applied chemistr	y and life science.								
Contents of class									
The students will be required to r	read textbooks and	d papers wi	ritten by	other language than	n Japanese, especi	ally English, which			
are suggested by his/her supervis	sor, and to report a	and discuss	deeply o	n his/her research	subject in the sem	inar.			
Self Preparation and Review									
Seminar on Applied Chemistry an Thesis Research on Applied Chemistry an All other relevant subjects in App Notes for textbook Supervisor will recommend textbo Notes for reference Goals to be achieved To acquire basic knowledge on ap To understand the contents of so To be able to make oral and posto Evaluation of achievement The evaluation is based on the s his/her research in the seminar. Is S: 90 or higher (out of 100 points)	d Life Science 2 nistry and Life Scie lied Chemistry and poks, papers, and re poks, papers, and re poks, papers in a er presentations re scores of reading dis/her supervisor),	ence Life Scien esearch ma d life scien given field elevant to p textbooks evaluates	ice aterials to ce I of applie papers he and scier the score	o students. ed chemistry and life /she has read ntific papers, discus	e science ssions, reports and	presentations o			
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 Other information Supervisor(s)									
Reference URL									
http://ens.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	o utilize advanced l	knowledge	in an inte	grated 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

(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 member; and to contribute to the team's achievements through working cooperatively with other team members

(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

(M44610070)Thesis Research on Applied Chemistry and Life Science[Thesis Research on Applied Chemistry and Life Science]

Subject name[English]	Thesis Research on Applied Chemistry and Life Science[Thesis Research on Applied									
	Chemistry and Lif	Chemistry and Life Science]								
Schedule number	M44610070	Subject area		Advanced Applied Chemistry and Life Science	Required or elective	Required				
Time of starting a course	2Years	Day of	the	Intensive	Credit(s)	6				
		week,period	1							
Faculty	Graduate Program	n for Master's	Degre	e	Subject grade	1~1				
Department Offered	Applied Chemistry	/ and Life Sci	ence		Beggining	M1, M2				
	grade									
Charge teacher name[Roman alphabet mark]	S4系教務委員, 4系各教員 4kei kyomu Iin-S, 4kei kakukyouin									
Numbering	ENV_MAS68015									

Objectives of class

In the course, the students will perform advanced researches on applied chemistry and life science under the direction of his/her supervisor in the laboratory. The aims of this lessen are to acquire the knowledge and experimental and analytical skills required for his/her research subject, to learn the scientific and social importance of his/her subject by researching for related studies by others, and to write a master's thesis. The students will acquire the skills and capacities of presentation by discussing in the final review of his/her Master's Thesis.

Contents of class

The students are required to have his/her research subject under the direction of his/her supervisor and perform his/her research by acquiring the experimental and analytical skills in the laboratory. The students will be expected to learn the scientific and social background of his/her research subject by collecting and reading the references relating to his/her research. The results from his/her research must be described as a master's thesis. The students must also present the results from his/her research, discuss, and answer the questions with the reviewers in the final master's dissertation defense. **Self Preparation and Review**

Related subjects

Seminar on Applied Chemistry and Life Science 1

Seminar on Applied Chemistry and Life Science 2

Notes for textbook

Supervisor will recommend textbooks, papers, and research materials to students.

Notes for reference

Goals to be achieved

To acquire basic knowledge on applied chemistry and life science

To master experimental techniques and analytical skills required for research on a given field of applied chemistry and life science

To be able to present and discuss on the results of his/her research

To be able to make safety control in experimental work

Evaluation of achievement

The score of the course is based on his/her master's thesis and the presentation in the final review of his/her master's thesis (the quality of his/her research, presentation skills, discussions and answering the questions on his/her presentation etc).

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

Other information

Supervisor

Reference URL http://ens.tut.ac.jp/en/ Office hours Students are encouraged visiting by appointment. Relations to attainment objectives of learning and education

Key words

Applied chemistry, Life science, Materials science and engineering

(M4461007T)Thesis Research on Applied Chemistry and Life Science[Thesis Research on Applied Chemistry and Life Science]

Subject name[English]	Thesis Research on Applied Chemistry and Life Science[Thesis Research on Applied							
	Chemistry and Life Science]							
Schedule number	M4461007T	Subject area		Advanced Applied Chemistry and Life Science	Required or elective	Required		
Time of starting a course	Year	Day of	the	Intensive	Credit(s)	6		
		week,peri	bd					
Faculty	Graduate Program	n for Maste	Subject grade	2~2				
Department Offered	Applied Chemistry and Life Science				Beggining	M1		
	grade							
Charge teacher name[Roman alphabet mark]	S4系教務委員, 4	S4系教務委員, 4系各教員 4kei kyomu Iin−S, 4kei kakukyouin						
Numbering	ENV_MAS68015							

Objectives of class

In the course, the students will perform advanced researches on applied chemistry and life science under the direction of his/her supervisor in the laboratory. The aims of this lessen are to acquire the knowledge and experimental and analytical skills required for his/her research subject, to learn the scientific and social importance of his/her subject by researching for related studies by others, and to write a master's thesis. The students will acquire the skills and capacities of presentation by discussing in the final review of his/her Master's Thesis.

Contents of class

The students are required to have his/her research subject under the direction of his/her supervisor and perform his/her research by acquiring the experimental and analytical skills in the laboratory. The students will be expected to learn the scientific and social background of his/her research subject by collecting and reading the references relating to his/her research. The results from his/her research must be described as a master's thesis. The students must also present the results from his/her research, discuss, and answer the questions with the reviewers in the final master's dissertation defense. **Self Preparation and Review**

Related subjects

Seminar on Applied Chemistry and Life Science 1

Seminar on Applied Chemistry and Life Science 2

Notes for textbook

Supervisor will recommend textbooks, papers, and research materials to students.

Notes for reference

Goals to be achieved

To acquire basic knowledge on applied chemistry and life science

To master experimental techniques and analytical skills required for research on a given field of applied chemistry and life science

To be able to present and discuss on the results of his/her research

To be able to make safety control in experimental work

Evaluation of achievement

The score of the course is based on his/her master's thesis and the presentation in the final review of his/her master's thesis (the quality of his/her research, presentation skills, discussions and answering the questions on his/her presentation etc).

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

Other information

Supervisor(s)

Reference URL

http://ens.tut.ac.jp/en/

Office hours

Students are encouraged visiting by appointment. 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 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

(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 member; and to contribute to the team's achievements through working cooperatively with other team members

(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

(M44610080)Seminar on Applied Chemistry and Life Science[Seminar on Applied Chemistry and Life Science]

	Chemisu y and Life				
Subject name[English]	Seminar on App	lied Chemistry and	Life Science[Semi	nar on Applied Ch	emistry and Life
	Science	1	1		1
Schedule number	M44610080	Subject area	Advanced	Required or	Required
			Applied	elective	
			Chemistry and		
			Life Science		
Time of starting a course	Year	Day of the	Intensive	Credit(s)	6
		week,period			
Faculty	Graduate Program	n for Master's Degre	Subject grade	2~	
Department Offered	Applied Chemistr	y and Life Science		Beggining	M1
				grade	
Charge teacher name[Roman	S4系教務委員 4	kei kyomu Iin−S			
alphabet mark]					
Numbering	ENV_MAS65015				
Objectives of class					
This course will provide the stud	lents with the opp	ortunity to study on	his/her research s	subject in applied of	chemistry and life
science by reading textbooks and	d naners under the	guidance of his/her	supervisor. The st	udents will learn t	he knowledge and
the presentation skills required for	r his/her research	in the seminar			
Contents of class		in the seminar.			
The students will be expected	to read touthook	and papara writte	n by foreign leng	iare that are ind:	cated by his/har
The students will be expected	a dooply on his /hos	s and papers writte	the cominer	lage that are mu	cated by his/her
Supervisor, and report and discus	s deeply on his/ he	r research subject in	i the seminar.		
Sen Preparation and Review					
Related subjects					
Thesis Research on Applied Cher	mistry and Life Scie	ence			
All other relevant subjects in App	lied Chemistry and	Life Sciences			
Notes for textbook					
Supervisor will recommend textbo	ooks and papers to	students.			
Notes for reference					
Goals to be achieved					
	aliad abamiata (an	d life ecience			
To acquire basic knowledge on ap	iontific nonous in a		ما مامم معنام الح		
To be able to make and and post	sientine papers in a	given neiu or applie	/aka kao waad	science	
To be able to make oral and post	er presentations re	levant to papers ne	she has read		
Evaluation of achievement					
The evaluation is based on the	scores of reading	papers, discussions,	reports and prese	ntations of his/he	r research in the
seminar. His/her supervisor evalu	ates 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					
Other information					
Supervisor Deference UDI					
nttp://ens.tut.ac.jp/en/					
Uffice hours					
Students are encouraged visiting	by appointment.				
Relations to attainment objective	es of learning and e	ducation			
1					
1					
(C) Practical and areative ability	o utilizo odvonoca I	nowledge in an inte	rated manner		
	o utilize auvalited P	nomeuge in an inte			

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

(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 member; and to contribute to the team's achievements through working cooperatively with other team members

(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

(M44630070)Advanced Polymer Chemistry[Advanced Polymer Chemistry]

Subject name[English]	Advanced Polym	er Chemistry[A	dvan	ced Polymer Chemis	try]			
Schedule number	M44630070	Subject area	1	Advanced	Required	or	Elective	
				Environmental	elective			
				and Life				
				Sciences				
Time of starting a course	Fall1 term	Day of	the	Fri.2~2	Credit(s)		1	
		week,period						
Faculty	Graduate Progra	m for Master's	Degre	e	Subject gra	de	1~	
Department Offered	Applied Chemistr	ry and Life Scie	ence		Beggining		M1	
					grade			
Charge teacher name[Roman	伊津野 真一,原	口 直樹 ITSUI	NO S	hinichi, HARAGUCHI	Naoki			
alphabet mark]								
Numbering	ENV_MAS52225							
Objectives of class								
This course focuses on the synth	netic aspects of po	olymer-support	ed ch	emistry. Several app	lications of s	olid-s	upported organic	
chemistry will be discussed.								
Contents of class								
(1) Preparation of functionalized	monomers							
(2) Preparation method of polyme	er-support							
(3) Preparation of functional poly	mers by polymer re	eaction method	I					
(4) Preparation of functional poly	mers by polymeriza	ation method						
(5) Nucleophilic reactions on the	tunctional polymer							
(6) Electrophhilic reactions on the	e functional polyme	ers						
(7) Polymer-supported reagents								
(8) Polymer-supported catalysts								
(9) Asymmetric reaction using po	lymer-supported o	atalyst						
(10) Solid phase peptide synthe	esis							
Self Preparation and Review								
Related subjects								
Organia Chemistry								
Polymer chemistry								
Notes for textbook								
Ne textbeck will be used								
No textbook will be used.								
Notes for reference								
Goals to be achieved								
1)To understand radical polymer	ization of vinyl mo	nomers						
2) To understand reactions of po	lymers							
3) To understand the synthesis o	of optically active p	olymers						
4) To understand the structure f	ormation of peptide	es and proteins						
Evaluation of achievement								
S:テスト・レポートの合計点(100	点満点)が 90 点以	ι <u></u>						
A:テスト・レポートの合計点(10	0 点満点)が 80 点	以上						
B:テスト・レポートの合計点(10	0 点満点)が 70 点	以上						
C:テスト・レポートの合計点(10	0 点満点)が 60 点	以上						
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								
レポートで実施								
By Report								
Details of examination								
Other information								

B-502 6813 itsuno@ens.tut.ac.jp

B-403 6812 haraguchi@ens.tut.ac.jp

Reference URL

http://ens.tut.ac.jp/chiral/index.html

Office hours

Any time

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 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

Polymer reaction, Optically active polymers, Polymeric catalyst, Asymmetric reactions, Peptide

(M44630120)Advanced Molecular Life Science[Advanced Molecular Life Science]

Subject name[English]	Advanced Molecular Life Science[Advanced Molecular Life Science]							
Schedule number	M44630120	Subje	ct are	a	Advanced	Required or	Elective	
					Environmental	elective		
					and Life			
					Sciences			
Time of starting a course	Fall1 term	Day week,j	of period	the	Thu.2~2	Credit(s)	1	
Faculty	Graduate Progran	n for Ma	ster's	Degre	e	Subject grade	1~	
Department Offered	Applied Chemistry	y and Lit	fe Sci	ence		Beggining grade	M1	
Charge teacher name[Roman alphabet mark]	田中 照通, 梅影 創 TANAKA Terumichi, UMEKAGE So							
Numbering	ENV MAS53225							
Objectives of class								
Aim:								
Students have to enlarge knowled	dge of biology, biocl	hemistry	∕, and	molec	ular biology by read	ing good papers in t	his field.	
Papers of Nobel Prize Laureates	are used in this Cla	ass, to le	earn b	oth im	portance and impac	t of the work.		
Aim:								
Students have to enlarge knowled	dge of biology, biocl	hemistry	∕, and	molec	ular biology by read	ing good papers in t	his field.	
Papers of Nobel Prize Laureates	are used in this Cla	ass, to le	earn b	oth im	portance and impac	t of the work.		
Contents of class								
Style:								
No Lecture.								
Students choose and read Nobel	Prize Laureates' P	apers, ai	nd Ma	ke a F	Presentation of the o	content.		
in 2016: Dr. Tanaka will control th	ne Class.							
Before the presentation by the S	tudents begins, Dr.	Tanaka	will ha	ave gu	idance of Biochemis	stry and Molecular I	Biology.	
Style:								
No Lecture.								
Students choose and read Nobel	Prize Laureates' Pa	apers, ai	nd Ma	ke a F	resentation of the o	content.		
in 2016: Dr. Tanaka will control th	e Class							
	10 01035.							
Before the presentation by the S	tudents begins. Dr.	Tanaka	will h	ave gu	idance of Biochemis	stry and Molecular I	Biology	
Self Preparation and Review		Turiullu	will fit	uve ge			Biology.	
Process:								
(1) Visit the HP of "Nobel Prize" Organization. http://nobelorize.org/								
	0	•			-			
(2) Choose two "Nobel Prize Awa	ards" in the List de	scribed	below	. (Limi	ted from "Chemistr	v" and " Physiology	or Medicine")	
and Get and Read carefully "orig	inal papers" of the	Laureat	es.	,		,		
(the information of Original Paper	(s) may appear in t	he HP o	or not.					
So you have to Find the Original	Paper(s) which is/a	are stror	ngly re	lated	with the Award.)			
*Note:								
You cannot choose the "Award"	which was already	chosen	by oth	ner St	udent.			
(3) Send me e-mail(s) which "Aw	ards"you have cho	osen. (ł	by 30t	h, Oct	t., 2018)			
in the e-mail, you have to describ	be:							
(i) your name, (ii) your student ID	,							
(iii) the name of Laboratory to wh	nich you belong,							
(iv) the year of each Award which	n you have chosen,	(for tw	o "Aw	ards")			
(v) all name(s) of Laureates of th	e Award, and							
(vi) information of the Original pa	pers of the Laureat	es (jou	rnal na	ame, y	vear, volume, pages,	authors'name, and	l title)	
(4) Make a presentation to the A	udience (Students a	and me)	for ea	ach "A	ward".			
Process.								

(1) Visit the HP of "Nobel Prize" Organization. http://nobelprize.org/

(2) Choose two "Nobel Prize Awards" in the List described below, (Limited from "Chemistry" and "Physiology or Medicine") and Get and Read carefully "original papers" of the Laureates.

(the information of Original Paper(s) may appear in the HP or not.

So you have to Find the Original Paper(s) which is/are strongly related with the Award.) $*Note \cdot$

You cannot choose the "Award" which was already chosen by other Student.

(3) Send me e-mail(s) which "Awards" you have chosen. (by 30th, Oct., 2018)

in the e-mail, you have to describe:

(i) your name, (ii) your student ID,

(iii) the name of Laboratory to which you belong,

(iv) the year of each Award which you have chosen, (for two "Awards")

(v) all name(s) of Laureates of the Award, and

(vi) information of the Original papers of the Laureates (journal name, year, volume, pages, authors' name, and title)

(4) Make a presentation to the Audience (Students and me) for each "Award".

Related subjects

Notes for textbook

Notes for reference

Goals to be achieved

Evaluation of achievement

For the Credit: 40 credits for each Presentation. (40x2=80) You can get up to 20 credits by Good questions and comment to the Audience.

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)
For the Credit:
40 credits for each Presentation. (40x2=80)
You can get up to 20 credits by Good questions and comment to the Audience.

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

Other information

Contact (e-mail): terumichi-tanaka@tut.jp Contact (e-mail): terumichi-tanaka@tut.jp

Reference URL

Office hours any time, but e-mail must be sent to me in advance. any time, but e-mail must be sent to me in advance.

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 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

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(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

(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

Nobel prize, presentation, molecular biology, biochemistry Nobel prize, presentation, molecular biology, biochemistry

(M44630310)Advanced Separation Chemistry[Advanced Separation Chemistry]

Subject name[English]	Advanced Separation Chemistry[Advanced Separation Chemistry]						
Schedule number	M44630310 Subject area		Advanced	Required or	Elective		
			Environmental	elective			
			and Life				
			Sciences				
Time of starting a course	Fall1 term	Day of the	Mon.4~4	Credit(s)	1		
		week,period					
Faculty	Graduate Progran	m for Master's Degre	Subject grade	1~			
Department Offered	Applied Chemistry	ry and Life Science	Beggining	M1			
			grade				
Charge teacher name[Roman	齊戸 美弘 SAITC	O Yoshihiro					
alphabet mark]							
Numbering	ENV_MAS52225						

Objectives of class

Due to the recent requirements for stationary phases in chromatography such as higher selectivity, various novel stationary phases have been developed by the systematic analysis of the retention behavior of sample solutes. Miniaturization and automation of the whole separation instruments have been regarded as additional important projects in separation science, because of the increasing requirements for recent separation systems, such as selective/specific detection with high sensitivities, high throughput processing, as well as an environmentally-friendly feature of the systems. In this course, novel technologies of sample preparation and chromatographic separations will be provided along with the miniaturization of the hyphenated analytical systems.

Contents of class

1. Development of novel stationary phases in liquid chromatography based on the systematic analysis of retention behavior.

2. Development of novel sample preparation media and the applications to real sample analysis in various chromatographic methods.

3. Miniaturization of analytical systems and the hyphenation.

Self Preparation and Review

Related subjects

Notes for textbook

No text book is required, however, basic knowledge of chromatography is desirable.

Notes for reference

Goals to be achieved

Evaluation of achievement

The evaluation will be made based on the score of the report and presentation.

[Evaluation basis] Students who attend all classes will be evaluated as follows:

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

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

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

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

Examination

レポートで実施

By Report

Details of examination

Other information

Y. Saito; Room# B-402; Phone 6803; E-mail: saito@ens.tut.ac.jp

Reference URL

Office hours

Anytime if available, however, an appointment by e-mail is strongly recommended.

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 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

(M44630320)Applied Physical Chemistry[Applied Physical Chemistry]

	Applied Physical	Chemistry[App	lied F	hysical Chemistry]					
Schedule number	M44630320	Subject area	1	Advanced	Required or	Elective			
				Environmental	elective				
				and Life					
				Sciences					
Time of starting a course	Fall2 term	Day of week period	the	Tue.3~3	Credit(s)	1			
Faculty	Graduate Program	n for Master's	Degre	e	Subject grade	1~			
Department Offered	Applied Chemistr	y and Life Scie		Beggining	M1				
-					grade				
Charge teacher name[Roman	松本 明彦 MATS	SUMOTO Akihil	ko						
alphabet mark]									
Numbering	ENV_MAS52225	ENV_MAS52225							
Objectives of class									
Intermolecular interaction plays	a key role in inter	facial characte	ristic	s such as a mechani	cal property of cor	nposite materials,			
adsorption and separation feature	es of molecules by	porous solids.	This	course deals with fu	indamental aspect	of the composite			
materials and basic principle of the	ne intermolecular ir	teraction. The	e adso	orption and separation	on phenomena are	also implemented			
based on the molecular interactio	on.								
Contents of class									
1.Composite materials overview	с : I с								
2.Formation of interface and inter	rtacial free energy								
3.Molecular interaction		- tion 0 0 Indu							
3-1 Electrostatic Interaction, 3-2	Orientation intera	ction, 3-3 Indu	icea ii	nteraction 3-4 Dispe	rsion interaction				
5 Control of interface interaction	by regulation of th	a chamical stri	untur	a of the interface					
3.00ht of of interface interaction	by regulation of th		uctur						
Self Preparation and Review									
Related subjects									
Notes for textbook									
Reference handouts will be provi	ded in the class.	Reference handouts will be provided in the class							
(Reference books)									
(Reference books) [For molecular interaction]									
(Reference books) [For molecular interaction] 1. J. N. Israelachivili Intermolecul	ar and Surface For	ces, 3rd Ed., Ad	cader	nic Press (2011).					
(Reference books) [For molecular interaction] 1. J. N. Israelachivili Intermolecul 2. Interface chemistry: D. H. Ever	ar and Surface For ett, Basic Principle	ces, 3rd Ed., Ad s of Colloid Sc	cader sience	nic Press (2011). a, Royal Society of C	hemistry(1988).				
(Reference books) [For molecular interaction] 1. J. N. Israelachivili Intermolecul 2. Interface chemistry: D. H. Ever	ar and Surface For rett, Basic Principle	ces, 3rd Ed., Ad s of Colloid Sc	cader sience	nic Press (2011). 9, Royal Society of C	hemistry(1988).				
(Reference books) [For molecular interaction] 1. J. N. Israelachivili Intermolecul 2. Interface chemistry: D. H. Ever [For adsorption]	ar and Surface For rett, Basic Principle	ces, 3rd Ed., Ad s of Colloid Sc	cader sience	nic Press (2011). e, Royal Society of C	hemistry(1988).				
(Reference books) [For molecular interaction] 1. J. N. Israelachivili Intermolecul 2. Interface chemistry: D. H. Ever [For adsorption] 1. F. Rouquerol, J. Rouquerol and	ar and Surface For rett, Basic Principle K.S.W. Sing, Adsor	ces, 3rd Ed., Ad s of Colloid Sc ption by Powdo	cader sience ers a	nic Press (2011). e, Royal Society of C nd Porous solids, Ac.	hemistry(1988). ademic Press (199	9)			
(Reference books) [For molecular interaction] 1. J. N. Israelachivili Intermolecul 2. Interface chemistry: D. H. Ever [For adsorption] 1. F. Rouquerol, J. Rouquerol and Notes for reference	ar and Surface For ett, Basic Principle K.S.W. Sing, Adsor	ces, 3rd Ed., Ad is of Colloid Sc ption by Powde	cader sience ers al	nic Press (2011). e, Royal Society of C nd Porous solids, Ac.	hemistry(1988). ademic Press (199	9)			
(Reference books) [For molecular interaction] 1. J. N. Israelachivili Intermolecul 2. Interface chemistry: D. H. Ever [For adsorption] 1. F. Rouquerol, J. Rouquerol and Notes for reference	ar and Surface For ett, Basic Principle K.S.W. Sing, Adsor	ces, 3rd Ed., Ad s of Colloid Sc ption by Powd	cader cience ers al	nic Press (2011). e, Royal Society of C nd Porous solids, Ac.	hemistry(1988). ademic Press (199	9)			
(Reference books) [For molecular interaction] 1. J. N. Israelachivili Intermolecul 2. Interface chemistry: D. H. Ever [For adsorption] 1. F. Rouquerol, J. Rouquerol and Notes for reference Goals to be achieved	ar and Surface For ett, Basic Principle K.S.W. Sing, Adsor	ces, 3rd Ed., Ad s of Colloid Sc ption by Powd	cader sience ers al	nic Press (2011). a, Royal Society of C nd Porous solids, Ac	hemistry(1988). ademic Press (199	9)			
(Reference books) [For molecular interaction] 1. J. N. Israelachivili Intermolecul 2. Interface chemistry: D. H. Ever [For adsorption] 1. F. Rouquerol, J. Rouquerol and Notes for reference Goals to be achieved	ar and Surface For ett, Basic Principle K.S.W. Sing, Adsor	ces, 3rd Ed., Ad s of Colloid Sc ption by Powd	cader sience ers a	nic Press (2011). e, Royal Society of C nd Porous solids, Ac	hemistry(1988). ademic Press (199	9)			
(Reference books) [For molecular interaction] 1. J. N. Israelachivili Intermolecul 2. Interface chemistry: D. H. Ever [For adsorption] 1. F. Rouquerol, J. Rouquerol and Notes for reference Goals to be achieved Evaluation of achievement	ar and Surface For ett, Basic Principle K.S.W. Sing, Adsor	ces, 3rd Ed., Ad s of Colloid Sc ption by Powd	cader sience	nic Press (2011). e, Royal Society of C nd Porous solids, Ac	hemistry(1988). ademic Press (199	9)			
 (Reference books) [For molecular interaction] 1. J. N. Israelachivili Intermolecular 2. Interface chemistry: D. H. Even [For adsorption] 1. F. Rouquerol, J. Rouquerol and Notes for reference Goals to be achieved Evaluation of achievement Achievemtnt will be evaluated on 	ar and Surface For ett, Basic Principle K.S.W. Sing, Adsor	ces, 3rd Ed., Ao s of Colloid Sc ption by Powd	cader sience ers a	nic Press (2011). 9, Royal Society of C nd Porous solids, Ac	hemistry(1988). ademic Press (199	9)			
 (Reference books) [For molecular interaction] 1. J. N. Israelachivili Intermolecular 2. Interface chemistry: D. H. Ever [For adsorption] 1. F. Rouquerol, J. Rouquerol and Notes for reference Goals to be achieved Evaluation of achievement Achievemtnt will be evaluated on S: remarks of the final exam is m 	ar and Surface For rett, Basic Principle K.S.W. Sing, Adsor K.S.W. Sing, Adsor	ces, 3rd Ed., Ao is of Colloid Sc ption by Powd nination.	cader ience ers a	nic Press (2011). e, Royal Society of C nd Porous solids, Ac	hemistry(1988). ademic Press (199	9)			
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Other information

A. Matsumoto: room # B-505, E-mail: aki*at*ens.tut.ac.jp (Please replace "*at*" to "@" when e-mailing) **Reference URL**

Office hours

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 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

(M44630330)Advanced Genomics[Advanced Genomics]

Subject		-	_							
	Advanced Ge	enomics[Advanced G	enomics]							
name[English]			1	1	1					
Schedule number	M44630330		Subject area	Advanced	Required or	Elective				
				Environmental	elective					
T	E 110 -			and Life Sciences	0 (1)	-				
lime of starting a	Fall2 term		Day of the	Thu.2~2	Gredit(s)	I				
Course	Cueduete Du	a muana fau Maatau'a D	week,period		Quilia at	1				
Faculty	Graduate Pro	ogram for Master's D	egree		Subject	1~				
Department Offered	Applied Cher	nistry and Life Scien	<u></u>		Beggining	M1				
Department Offered	Applied Offer		66		grade					
Charge teacher	浴 俊彦 FKI	Toshihiko			8.000					
name[Roman alphabet										
mark]										
Numbering	ENV_MAS53	225								
Objectives of class	_									
Students will learn the	significance an	d methods for genon	nics in basic and	applied biological scie	ances The aim o	of this class is				
to improve the ability t	o present and	discuss with each o	other by reading	effective research na	ners nublished i	n high-impact				
iournals			and by rouging							
Contents of class										
1st week: Introduction of	of genomics									
2nd week: Genome stru	ctural analyses									
3rd week: Genome func	tional analyses	, (1)								
4th week: Genome func	tional analyses	(2)								
5th week: Applications	of genomics									
6th week: Presentation	of subjected n	apers by students (1))							
7th week: Presentation	of subjected p	apers by students (2))							
Note: The	number of pres	entation depends on	, the number of st	udents						
8th week: Review										
Self Preparation and Re	view									
Handout and effective	research nan	ers will be given Si	tudents are stro	ngly encouraged to	preview and rev	view of these				
matariala	recouldn't pup	Handout and effective research papers will be given. Students are strongly encouraged to preview and review of these								
materials.										
Related subjects										
Related subjects Related subjects: Molec	ular Biology I a	and II. Genetic Engine	ering							
Related subjects Related subjects: Molect Notes for textbook	ular Biology I a	and II, Genetic Engine	eering							
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M2:

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

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

C: Achieved 60% of goals and obtained total points of presentation and reports, 55 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

T. Eki (G505, ex. 6907) e-mail: eki@ens.tut.ac.jp Reference URL

Office hours

Make an appointment by e-mail.

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 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

(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

(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

genomics, metagenomics

(M44630370)Advanced Life Science and Biotechnology 1[Advanced Life Science and Biotechnology 1]

Subject name[English]	Advanced Life S	cience and l	Riotechn	olomy 1[Advanced Li	fe Science and Bio	technology 1]		
	MAA620270	Subject of		Advanced Li	Beguired or Elective			
	WI44030370	Subject	irea	Auvanceu	Required or	Liective		
				Environmental	elective			
				and Life				
		-		Sciences		-		
Time of starting a course	Fall term	Day of	the the	Intensive	Credit(s)	2		
		week,per	iod					
Faculty	Graduate Progra	m for Maste	r's Degr	ee	Subject grade	1~		
Department Offered	Applied Chemistr	ry and Life S	Science		Beggining	M1		
			grade					
Charge teacher name[Roman	S4系教務委員 4	lkei kyomu l	in-S					
alphabet mark]								
Numbering	ENV_MAS53225							
Objectives of class								
This course will provide the stud	ents with the oppo	ortunity to s	tudv on	selected subjects in	, the realm of adva	nced life science		
and biotechnology			cuuy on					
and bioteonnoiogy.								
Contents of class								
The classes will be given by his/	her supervisor. Th	ne students	will be r	equired to read text	books and papers	but the type and		
contents of this course depend o	on his/her supervis	or.						
Self Preparation and Review								
Related subjects								
Advanced Life Science and Biote	chnology 2							
Notes for textbook								
Supervisor will recommend textb	ooks and papers to	students.						
Notes for reference								
Goals to be achieved								
To acquire advanced knowledge of	on life science and	biotechnolo	gy					
To be able to report and discuss	the contents of te	xtbooks and	l papers	he/she has read.				
Evaluation of achievement								
The evaluation is based on the se	pores of reports p	recentation	and av	amination				
His /bar supervisor avaluates the		esentations	s, anu ex					
S: 00 as higher (aut of 100 points	300165.							
S. 90 or higher (out of 100 points	<i>.</i>),							
A: 80 or higher (out of 100 points	s), >							
B: 70 or higher (out of 100 points	s),							
C: 60 or higher (out of 100 points	s)							
Examination								
試験期間中には何も行わない								
None during exam period								
Details of examination								
Other information								
Supervisor								
Reference URL								
Office hours								
Students are encouraged visiting	by appointment							
	,							
Distance in the second second								
Relations to attainment objective	es of learning and e	oducation						
(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

Life science, biotechnology, bioengineering, molecular biology, microbiology, genomics

(M44630390)Advanced Materials Chemistry 1[Advanced Materials Chemistry 1]

Subject name[English]	Advanced Materials Chemistry 1[Advanced Materials Chemistry 1]							
Schedule number	M44630390 Subject area Advanced			Required o	r Ele	ective		
					Environmental	elective		
					and Life			
					Sciences			
Time of starting a course	Fall term	Day	of	the	Intensive	Credit(s)	2	
		week,p	period					
Faculty	Graduate Progra	m for Ma	ster's	Degr	ee	Subject grade	1~	<u> </u>
Department Offered	Applied Chemistr	y and Lif	e Scie	ence		Beggining grade	M1	1
Charge teacher name[Roman	S4系教務委員 4	S4系教務委員 4kei kyomu Iin-S						
alphabet mark]								
Numbering	ENV_MAS52225							
Objectives of class								
This course will provide the stud chemistry.	ents with the oppo	rtunity to	o stud	ly on	the selected subject	in the realm of	advano	ced materials
Contents of class								
The classes will be given by his/	her supervisor. Th	ie studen	ıts wil	l be r	equired to read text	books and paper	s but	the type and
contents of this course depend o	n his/her supervis	or.						
Self Preparation and Review	•							
-								
Related subjects								
Advanced Materials Chemistry 2								
Notes for textbook								
Supervisor will recommend textb	ooks and papers to	students	s.					
Notes for reference								
Goole to be echieved								
		atua (
To be able to report and discuss	the contents of to	stry. vthaaka (and n	noro	ha laha haa raad			
To be able to report and discuss	the contents of te	ALDOOKS 6	anu pa	apers	ne/ she has reau.			
Evaluation of achievement								
The evaluation is based on the so	cores of reports in	econtatio	one a	nd ev	amination			
His/her supervisor evaluates the	scores	esentatio	5115, a					
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								
Other information								
Supervisor								
Reference URL								
Office hours								
Students are encouraged visiting	by appointment.							
Relations to attainment objective	s of learning and e	ducation	1					
5	-							
(C) Presting and supplier shift of		ان - ان معا						
(C) Practical and creative skills t	t applied advanced	Knowledg	e in a	in inte	grated manner	fielder and to	+6-	prostical
	uladaa faramahi	y and lif	ie sci	erice	as well as related	neius, and have	ne p	practical and
(C1) Have the stills to utilize such know	wieage for problem	solving i	n an i Liad I	ntegra	aled manner	and the second PC		
(UI) mave the skills to voluntaril	y acquire theories	and appl	ned ki	nowle	uge about applied cl	iemistry and life	scienc	se as well as
related fields; and to utilize such	Knowledge in an in	legrated	mann	er				

(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

(M44630410)Advanced Chemical Technology 1[Advanced Chemical Technology 1]

Subject name[English]	Advanced Chemical Technology 1[Advanced Chemical Technology 1]					
Schedule number	M44630410	Required or	Elective			
		Environmental		elective		
				and life	0.000.00	
				Sciences		
Time of starting a course	Fall term	Day o	f the	Intensive	Credit(s)	2
		week,per	iod			
Faculty	Graduate Progra	am for Maste	er's De	gree	Subject grade	1~
Department Offered	Applied Chemist	ry and Life	Science)	Beggining grade	M1
Charge teacher name[Roman	S4系教務委員	4kei kyomu		L.		
alphabet mark]						
Numbering	ENV_MAS52225					
Objectives of class						
This course will provide the stud technology.	ents with the opp	ortunity to s	study o	n the selected subjec	ct in the realm of a	dvanced chemical
Contents of class						
The classes will be given by his/	her supervisor. T	he students	will be	required to read tex	tbooks and papers	but the type and
contents of this course depend of	n his/her supervi	sor.		1		
Self Preparation and Review						
Related subjects						
Advanced Chemical Technology 2	2					
Notes for textbook						
Supervisor will recommend textb	ooks and papers t	o students.				
Notes for reference						
Goola to be aphiaved						
		- I				
To be able to report and discuss	on chemical techn	ology.		ha /aha haa waad		
To be able to report and discuss	the contents of t	exupook and	papers	ne/ sne nas reau.		
The evaluation is based on the ev			م مسط ،	vaniantian		
The evaluation is based on the so	cores of reports, p	resentation	s, and e	examination.		
Ris/her supervisor evaluates the	Scores.					
A: 90 or higher (out of 100 points	.)					
R: 70 or higher (out of 100 points	.).					
B: 70 or higher (out of 100 points	.).					
C: 60 or higher (out of 100 points	5)					
Examination 計験期間内にと何もなわい						
武映州间中には凹む1777ない None during even period						
Details of examination						
Other information						
Supervisor						
Reference URL						
Office hours						
Students are encouraged visiting	by appointment.					
Relations to attainment objective	s of learning and	education				
(C) Practical and creative skills t	o utilize advanced	knowledge	in an in	tegrated manner	C 11	
Have advanced knowledge abou	t applied chemis	try and life	scienc	e as well as related	tields; and have	the practical and
creative skills to utilize such kno	wiedge tor probler	n solving in a	an integ	rated manner		
(CI) Have the skills to voluntaril	y acquire theorie	s and applie	d know	edge about applied o	nemistry and life s	cience as well as
related fields; and to utilize such	knowledge in an ii	ntegrated ma	anner		and the state	
(GZ) Have the skills to learn, I	by experience, m	ethodologies	tor r	esearch and develop	ment through inte	grating 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

(M45610010)Seminar on Architecture and Civil Engineering I[Seminar on Architecture and Civil Engineering I]

Subject name[English]	Seminar on Ar	chitecture and Giv	II Engineering ILSe	eminar on Archite	ecture and Givil
	Engineering I		[1
Schedule number	M45610010	Subject area	Advanced	Required or	Required
			Architecture	elective	
			and Civil		
			Engineering		
Time of starting a course	Year	Day of the	Intensive	Credit(s)	3
_		week,period			
Faculty	Graduate Progra	m for Master's Degre	e	Subject grade	1~
Department Offered	Architecture and	Civil Engineering		Beggining	M1
				grade	
Charge teacher name[Roman	S5系教務委員	5kei kvomu lin-S		8.000	
alphabet mark]					
Numbering	AI(0_101A331013				
Objectives of class					
All the students are required to	attend all the sen	ninars, which is arrar	nged by the laborate	ory supervisor for	the special study
subjects related to the current re	esearch activity of	the laboratory. The	scheduled program o	of the seminars is a	announced by the
supervisor at the guidance of the	seminar.				
Contents of class					
Salf Properation and Poview					
Sen Preparation and Review					
Related subjects					
Notes for textbook					
Notes for textbook					
Notes for reference					
Goals to be achieved					
Evaluation of achievement					
Report					
Examination					
その他					
Other					
Details of examination					
Other Information					
Reference URL					
Office hours					
Office flours					
Relations to attainment objective	s of learning and	education			
1					
Key words					
Noy Worus					

(M45610020)Seminar on Architecture and Civil Engineering II[Seminar on Architecture and Civil Engineering II]

Outlinet mentel[Englink]				·····	
Subject name[English]	Seminar on A	rchitecture and Giv	II Engineering IILS	eminar on Archit	ecture and Givil
<u> </u>	Engineering II]			_	
Schedule number	M45610020	Subject area	Advanced	Required or	Required
			Architecture	elective	
			and Civil		
			Engineering		
Time of starting a course	Year	Day of the	Intensive	Credit(s)	3
-		week,period			
Faculty	Graduate Progra	am for Master's Degre	ee	Subject grade	2~
Department Offered	Architecture an	d Civil Engineering		Beggining	M2
Dopardinente errereu				grade	
Charge teacher neme[Berren	05	Ekoi kuomu lin-S		grado	
Charge teacher hame_roman	35 示 软 伤 女 貝	Jker kyönnu im-3			
Numbering	ARC_MAS61015)			
Objectives of class					
All the students are required to	attend all the se	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	,			,
Contents of class	oonnindi.				
Self Preparation and Review					
Related subjects					
Notes for textbook					
Notes for reference					
Goals to be achieved					
Evaluation of achievement					
Papart					
その他					
Other					
Details of examination					
Other information					
Reference URL					
Office hours					
Relations to attainment objective	s of learning and	education			
Key werde					
Ney Words					

(M45610030)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	M45610030	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	Civil Engineering		Beggining grade	M1, M2
Charge teacher name[Roman alphabet mark]	S5系教務委員,	5系各教員 5kei kyoi	mu Iin−S, 5kei kakuk	youin	
Numbering	ARC_MAS51025				
Objectives of class					
This thesis research on architect	ture and civil engin	eering is designated	to deepen the know	vledge and enhanc	e the skills of the
students in their research fields t	hrough the self-or	iented endeavour wi	th the instruction of	his/her superviso	r(s).
Contents of class					
The subjects and the contents o	of the thesis vary	depending on the la	boratory. All studen	ts must present t	neir thesis at the
end of the course and take a fin	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 an	id conducted under	r the guidance of the	supervisor(s).		
Self Preparation and Review					
Related subjects					
TBD by the laboratory					
Notes for textbook					
IBD by the laboratory					
Notes for reference					
Goals to be achieved					
Evaluation of achievement					
This credit is assigned for all the	process for the pr	eparation and presei	ntation of the thesis	·	
Examination その他					
て の 1世 Other					
Details of examination					
Other information					
Refer to administration office.					
Reference URL					
Refer to the URL of each laborat	ory				
Office hours					
Reter to administration office.					
Relations to attainment objective	is of learning and e	Jaugation			
Key words					

(M45610030)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	M45610030	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	ee	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,	5系各教員 5kei kyo	mu Iin−S, 5kei kakuk	youin	
Numbering	ARC_MAS61015				
Objectives of class					
This thesis research on architec	ure and civil engir	neering is designated	to deepen the know	wledge and enhanc	e the skills of the
students in their research fields t	hrough 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	its must present t	heir 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	id conducted unde	er the guidance of the	e supervisor(s).		
Self Preparation and Review					
Related subjects					
IBD by the laboratory					
Notes for reference					
Goals to be achieved					
Evaluation of achievement					
This credit is assigned for all the	process for the pi	reparation and prese	ntation of the thesis	5.	
Examination この世					
その他 Other					
Details of examination					
Uther information					
Reference LIPI					
Refer to the LIRL of each laborat	07/				
Office hours	UI y				
Refer to administration office					
Relations to attainment objective	s of learning and	education			
Key words					

(M4561003T)Thesis Research on Architecture and Civil Engineering[Thesis Research on Architecture and Civil Engineering]

Subject name[English]	Thesis Research	on Architecture and	Civil Engineering[T	hesis Research on	Architecture and
	Civil Engineering]		0 01		
Schedule number	M4561003T	Subject area	Advanced	Required or	Required
			Architecture	elective	
			and Civil		
			Engineering		
Time of starting a course	Year	Day of the	Intensive	Credit(s)	6
_		week,period			
Faculty	Graduate Program	n for Master's Degre	e	Subject grade	2~2
Department Offered	Architecture and	Civil Engineering		Beggining	M1
				grade	
Charge teacher name[Roman	S5系教務委員, S	5系各教員 5kei kyor	mu Iin−S, 5kei kakuk	youin	
alphabet mark]					
Numbering	ARC_MAS61015				
Objectives of class					
This thesis research on architect	ure and civil engine	eering is designated	to deepen the know	wledge and enhanc	e the skills of the
students in their research fields t	hrough the self-ori	ented endeavour wi	th the instruction of	f his/her superviso	r(s).
Contents of class	-				
The subjects and the contents o	of the thesis varv o	depending on the la	boratory. All studer	its must present t	heir thesis at the
end of the course and take a fin	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 an	d conducted under	the guidance of the	supervisor(s).		
Self Preparation and Review		Ū.			
Related subjects					
Notes for textbook					
Notes for reference					
Goals to be achieved					
Evaluation of achievement					
This exercit is assigned for all the	nunnen fou the nu		tation of the thesis		
This credit is assigned for all the	process for the pre	eparation and preser	itation of the thesis		
Examination 計除期目内には何もなない					
武映朔间中には凹む1丁石/ない					
None during exampleriod					
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	s of learning and e	ducation			
Key words					

(M45610040)Seminar on Architecture and Civil Engineering[Seminar on Architecture and Civil Engineering]

Subject name[English]	Seminar on Ai	rchitecture and G	ivil Engineering[Ser	ninar on Archite	cture and Givil
	Engineering	1	1		I
Schedule number	M45610040	Subject area	Advanced	Required or	Required
			Architecture	elective	
			and Civil		
			Engineering		
Time of starting a course	Year	Day of the	Intensive	Credit(s)	6
		week,period			
Faculty	Graduate Progra	m for Master's Degr	ee	Subject grade	2~
Department Offered	Architecture and	d Civil Engineering		Beggining	M1
				grade	
Charge teacher name[Roman	S5系教務委員	5kei kvomu Iin-S		.	I
alphabet mark]					
Numbering	ARC MAS51015				
	/ ((0_10)001010				
All the students are required to	attend all the sem	ninars, which is arrai	nged by the laborate	bry supervisor for	the special study
subjects related to the current re	esearch activity of	the laboratory. The	scheduled program of	of the seminars is a	announced by the
supervisor at the guidance 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					
·					
Billing and the state					
Related subjects					
Notes for textbook					
Notos for reference					
Notes for reference					
Goals to be achieved					
Evaluation of achievement					
Depart					
Report					
レホートで実施					
By Report					
Details of examination					
Other information					
Reference URL					
Office hours					
Deletione to etteinment altration		advantion			
Relations to attainment objective	s or learning and (education			
1					
Key words					

(M45630020)Finite Element Method for Continua and Bar Structures[Finite Element Method for Continua and Bar Structures] Subject name[English] Finite Element Method for Continua and Bar Structures[Finite Element Method for Continua and Bar Structures] M45630020 Required or Schedule number Advanced Elective Subject area Architecture and elective **Civil Engineering** Time of starting a Fall term Day of the Tue 4~4 Credit(s) 2 week,period course Faculty Graduate Program for Master's Degree Subject 1~ grade Department Offered Architecture and Civil Engineering Beggining M1 grade 中澤 祥二 NAKAZAWA Shoii Charge teacher name[Roman alphabet mark] ARC MAS52125 Numbering **Objectives of class** このコースは、有限要素解析とトラス構造などの単純なバーのコンピュータプログラミングを使用して、静的解析の基礎を学習し ます。 The course provides fundamentals for static analysis by using Finite Element Analysis and computer programming for simple bar, such as truss structures. **Contents of class** 1. 弾性力学の基礎とその応用分野 2.-3.トラス要素に対する仮想仕事の原理 3.-4.トラス要素に対する最小ポテンシャルエネルギー原理 5.-6.トラス構造の有限要素法の定式化 7.トラス構造の剛性マトリクス 8. 多自由度の線形連立方程式のための数値解法 9.-12. FEM プログラムの構造 13.-14. 数値解析の例題 15.3D 梁要素への拡張の導入 1. Fundamental of elasticity and its application fields 2.-3. Principle of virtual work for bar elements 3.-4. Principle of minimum potential energy for bar elements 5.-6. Formulation of finite element method of truss structures 7. Stiffness matrix of truss structures 8. Numerical solution for linear simultaneous equations with multiple degrees of freedom 9.-12. Structure of FEM program 13.-14. Example of numerical analysis 15. Introduction of extension to 3D beam elements Self Preparation and Review **Related subjects** Notes for textbook Lecture materials are distributed to students as handout.Powerpoint files are avilable for students as well. Reference1 Concepts and Applications of finite Element Analysis Book title ISBN Author Publisher Robert D. Cook Publish year Notes for reference Goals to be achieved 1)エネルギ原理(最小ポテンシャルエネルギ停留の原理、仮想仕事の原理)を理解すること 2)トラス構造物の有限要素法を理解すること 3)有限要素法プログラミングと多自由度連立方程式の解法を理解すること 1) To understand the principle of energy (principle of minimum potential energy retention, principle of virtual work) 2) To understand the finite element method of truss structures 3) To understand the finite element method programming and the solution of simultaneous equations with multiple degrees of freedom

Evaluation of achievement

評価基準:原則的にすべての講義に出席し,かつすべての演習問題レポートを提出したものにつき、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、かつテストの合計点(100 点満点)が 90 点以上 A:達成目標を90%達成しており、かつテストの合計点(100 点満点)が80 点以上 B:達成目標を80%達成しており、かつテストの合計点(100 点満点)が70 点以上 C:達成目標を 70%達成しており、かつテストの合計点(100 点満点)が 60 点以上 [Evaluation basis] Students who attend all the classes and submitted all the exercise reports will be evaluated as follows: S: Obtained total points of exams, 90 or higher (out of 100 points). A: Obtained total points of exams, 80 or higher (out of 100 points). B: Obtained total points of exams, 70 or higher (out of 100 points). C: Obtained total points of exams, 60 or higher (out of 100 points). Examination レポートで実施 By Report Details of examination Other information Contact to Shoji Nakazawa : Room : D-816, Phone :6857 E-mail : nakazawa@ace.tut.ac.jp Reference URL http://www.st.ace.tut.ac.jp/~nakazawa Office hours 月曜日 16:30-17:30 16:30 to 17:30 on Monday Relations to attainment objectives of learning and education Key words

(M45630050)Geotechnical Analysis[Geotechnical Analysis]

Subject name[English]	Geotechnical Ana	alysis[Geotech	nical /	Analysis]				
Schedule number	M45630050	Subject are	a	Advanced	Required	or	Elective	
			- 1	Architecture	elective			
				and Civil				
				Engineering				
Time of starting a course	Fall term	Dav of	the	Thu.2~2	Credit(s)		2	
		week,period						
Faculty	Graduate Program	n for Master's	Degre	e	Subject gra	de	1~	
Department Offered	Architecture and	Civil Engineer	ing		Beggining		M1	
		-	-		grade			
Charge teacher name[Roman	三浦 均也 MIUR	A Kinya			-			
alphabet mark]								
Numbering	ARC_MAS52725							
Objectives of class								
Understand the concept of an	alvtical methods fo	or flow proble	m in	geotechnical engine	eering and r	nastei	r the associated	
mathematical calculation method	s			Sectorinities on Sint				
Contents of class								
Introductory guidance								
01 Fundamentals of trigonometric	c function							
02 Unification of trigonometric f	ination and avacuation	ntial function						
02. Onlineation of trigonometric fu	anction and expone	nual lunction						
04. Complex Equipier equipe								
04. Complex Fourier series								
US. Expansion of Fourier analysis								
Ub. Governing equation for flow p	roblem							
07. Exact solution of T-D steady	problem	1						
08. Solution by means of Fourier	I ransformation for	I-D Steady F	robler	n				
09. Solution for Steady 2–D and 3	3-D steady problem	1						
10. Exact solution of 2–D flow pro	oblem							
11. Numerical solution by means	of Weighted Residu	als Method (W	RM)					
12. Numerical solution by means	of Finite Difference	Method (FDN	1)					
13. Numerical solution by means	of Finite Element M	lethod (FEM)						
Term-end exam								
Self Preparation and Review								
Related subjects								
Geologic hazards and mitigation r	lanning (English Ma	asre course)						
Notes for textbook								
Handouts are distributed at the k	acturac							
Notes for reference	ectures							
.								
Goals to be achieved								
Understanding the basic concept	of analytical metho	od for flow pro	blems	in geotechnical ana	lysis.			
Evaluation of achievement								
The achievement is evaluated ba	sed on the report.							
Examination								
レポートで実施								
By Report								
Details of examination								
Other information	ation							
				103. Tel: 0532-44-6844. Mail: k-miura@ace.tut.ac.ip				
D803, Tel: 0532-44-6844, Mail: k-	-miura@ace.tut.ac.jp	D						
D803, Tel: 0532-44-6844, Mail: k-	-miura@ace.tut.ac.jp	0						
D803, Tel: 0532-44-6844, Mail: k- Reference URL under preparing	-miura@ace.tut.ac.jp	0						
D803, Tel: 0532-44-6844, Mail: k- Reference URL under preparing Office hours	-miura@ace.tut.ac.jp	0						
D803, Tel: 0532-44-6844, Mail: k Reference URL under preparing Office hours 12:00-14:00 on Wednesday	-miura@ace.tut.ac.jp	0						

not specified

Key words

Disaster, Earthquake, Geologic Hazards, Numerical Analysis

(M45630170)Management of Technology[Management of Technology]

Subject name[English]	Management of T	Management of Technology[Management of Technology]					
Schedule number	M45630170	M45630170 Subject area Advanced			Elective		
			Architecture	elective			
			and Civil				
			Engineering				
Time of starting a course	Fall term	Day of the	Tue.5~5	Credit(s)	2		
		week,period					
Faculty	Graduate Program	m for Master's Degre	e	Subject grade	1~		
Department Offered	Architecture and	Civil Engineering		Beggining	M1		
				grade			
Charge teacher name[Roman	藤原 孝男 FUJIV	WARA Takao					
alphabet mark]							
Numbering	ARC_MAS55025						

Objectives of class

The main objective is to understand the function of technological entrepreneurship for commercialization of basic research findings from a perspective of financial engineering.

Especially the decision-making model is examined for irreversible investment under uncertainty.

Contents of class

From a view point of regarding the technological development as investment in risky but promising projects, this class has following topics:1)Technological Entrepreneurship, 2)Technological Management Decision, 3)Investment Science, 4)Real Options, 5)Game Theory, and 6)Eco-system for high-tech entrepreneurship or start-ups.

This academic year's schedule (each week) regarding real options will be following:

1-2: What is real options?

3-4: Net Present Value as benchmark

5: Decision tree

6-7: Simple options

8-9: Compounded options and switching options

10-11: Multi-period steps

12-13: The 4-stage evaluation method for real options

14-15: Volatility estimation

Self Preparation and Review

Related subjects

Management Science (English), Operations Management (Japanese), Game Theory (Japanese), Real Options (Japanese), Entrepreneurship (Japanese), Management(Japanese) & Innovation Management (Japanese).

Notes for textbook

Study materials will be introduced at first class date.

Notes for reference

Goals to be achieved

1)Able to understand the function of business plan for transformation of technological ideas into economic value.

2)Able to understand the risk-hedge model for irreversible investment under uncertainty.

3)Able to understand the necessary of strategic response to competitors for survival.

Evaluation of achievement

[Evaluation criteria] Students attending all classes will be evaluated as follows:

A: Achieved at least 80% 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, 65 or higher (out of 100 points).

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

Examination

その他

Other

Details of examination

Other information

Office#: B-313, Phone#: 6946, e-mail: fujiwara@las.tut.ac.jp Reference URL

Office hours Anytime if available.

Relations to attainment objectives of learning and education

Key words

Real Options, Game Theory, & Technological Entreprneurship

(M45630190)Advanced Structura	l System Planning	and Design I[Advan	ced Structural Syste	em Planning and D	esign []
Subject name[English] Advanced Structural System Planning and Design I[Advanced Structural System Planning and Design I]					System Planning
Schedule number	M45630190	Subject area	Advanced	Required or	Elective
			Architecture	elective	
			and Civil		
Time of starting a source	Fall torm	Day of the	Intensivo	Credit(c)	2
Time of starting a course		week,period	Intensive	Great(s)	2
Faculty	Graduate Progra	m for Master's Degr	e	Subject grade	1~
Department Offered	Architecture and	l Civil Engineering		Beggining grade	M1
Charge teacher name[Roman alphabet mark]	S5系教務委員 !	5kei kyomu Iin-S			
Numbering	ARC_MAS52025				
Objectives of class	_				
It depends on the laboratory. T	The resistered stu	dents are required	to attend all the s	eminars, which is	arranged by the
laboratory supervisor for the spe	ecial study subject	s related to the cur	rent research activi	ty of the laborator	v. The scheduled
program of the seminars is annou	inced by the super	visor at the guidance	e of the seminar.	,	,
Contents of class		G			
Self Preparation and Review					
Related subjects					
-					
Notes for textbook					
Notes for reference					
Goals to be achieved					
Evaluation of achievement					
Evamination					
By Report					
Details of examination					
Other information					
Reference URL					
Office hours					
Relations to attainment objective	es of learning and (education			
Key words					

(M45630210)Advanced Environm	ental System Plann	ning and [Desig	n I[Ad	vanced Environmen	tal System Plannin	g and Design I]
Subject name[English]	Advanced Enviro Planning and Des	onmental sign I]	Syste	em Pl	anning and Design	I[Advanced Enviro	onmental System
Schedule number	M45630210	Subjec	t area	a	Advanced Architecture and Civil Engineering	Required or elective	Elective
Time of starting a course	Fall term	Day week.p	of eriod	the	Intensive	Credit(s)	2
Faculty	Graduate Program	n for Mas	ster's	Degre	e	Subject grade	1~
Department Offered	Architecture and	Architecture and Civil Engineering Beggining M1					
Charge teacher name[Roman alphabet mark]	S5系教務委員 5	ikei kyom	u Iin-	S			1
Numbering	ARC_MAS54025						
It depends on the laboratory. T laboratory supervisor for the spe program of the seminars is annou Contents of class	The resistered stude acial study subjects unced by the superv	dents are s related visor at tl	e requ to th he gui	uired e curi idance	to attend all the s rent research activi e of the seminar.	eminars, which is ty of the laborator	arranged by the y. The scheduled
Self Preparation and Review							
Related subjects							
Notes Contraction							
Notes for textbook							
Notes for reference							
Goals to be achieved							
Evaluation of achievement							
Examination							
レポートで実施							
By Report							
Details of examination							
Other information							
Reference URL							
Office hours							
Relations to attainment objective	es of learning and e	ducation					
Key words							
L							

(M45630230)Advanced Regional System Planning and Design I[Advanced Regional System Planning and Design I]

Subject name[English]	Advanced Regio	nal System Planning	and Design I Adva	aced Regional Sys	tem Planning and			
	Decign I							
Schedule number	M45630230	Subject area	Advanced	Required or	Flective			
	10143030230	Subject area	Architactura	cleating	LIECTIVE			
			Architecture	01001140				
			En aline e ulina					
Time of starting a course	E all da una	Dave of the	Engineering	Out dit(a)	0			
lime of starting a course	Fall term	Day of the	Intensive	Gredit(s)	Z			
		week,period						
Faculty	Graduate Program for Master's Degree			Subject grade	1~			
Department Offered	Architecture and Civil Engineering			Beggining	M1			
			grade					
Charge teacher name[Roman	S5系教務委員 5kei kyomu Iin−S							
alphabet mark]								
Numbering	ARC_MAS53025							
Objectives of class								
It depends on the laboratory. T	he resistered stu	udents are required	to attend all the s	eminars, which is	arranged by the			
laboratory supervisor for the spe	cial study subject	ts related to the our	rent research activi	ty of the laborator	v. The scheduled			
program of the seminars is appoint	inced by the sune	rvisor at the guidance	of the seminar		y. The concurct			
Contents of class	nocu by the supe							
Self Preparation and Review								
Related subjects								
Notes for textbook								
Notes for reference								
Goals to be achieved								
Evaluation of achievement								
P 1 11								
レボートで実施								
By Report								
Details of examination								
Other information								
Reference URL								
Office hours								
Relations to attainment objectives of learning and education								
Key words								

(M45630290)Seismic Design of Structures[Seismic Design of Structures]

Subject name[English]	Seismic Design of	f Structures[Seisn	ic Design of Struct	ures]				
Schedule number	M45630290	Subject area	Advanced	Required or	Flective			
	10140000200		Architecture	elective	LIGGLIVE			
			and Own	000040				
			En sin a suin s					
The state of the s	F U I		Engineering	0	0			
lime of starting a course	Fall term	Day of the	Mon.4~4	Great(s)	Z			
		week,period						
Faculty	Graduate Progran	n for Master's Deg	ree	Subject grade	1~			
Department Offered	Architecture and	Civil Engineering		Beggining	M1			
				grade				
Charge teacher name_Roman	齊藤 大樹 SAITOH Taiki							
alphabet mark								
Numbering	ARC_MAS52125							
Objectives of class								
The objective of this class is to	learn the evaluat	tion method of st	ructural performanc	e of the building b	ased on dynamic			
behavior and ultimate strength ar	d deformation capa	acitv.		Ū	-			
The objective of this class is to	, learn the evaluat	tion method of st	ructural performanc	e of the building b	ased on dynamic			
behavior and ultimate strength ar	d deformation capa	acity.						
Contents of class		~~··y.						
Contents of cases								
1. Basic concept of seismic design of building								
2. Force-deformation characteris	aviating had	endis						
3. Seismic evaluation method for	existing buildings							
3-1. Screening method 1								
3-2. Screening method 2								
4. Post-seismic quick risk assess	ment of damaged b	ouilding						
1. Basic concept of seismic desig	n of building							
2. Force-deformation characteris	tics of building mat	erials						
3 Seismic evaluation method for	existing huildings							
3-1 Screening method 1								
3-1. Screening method 1								
3-2. Screening method 2								
4. POST-Seisinic quick risk assess	ment of damaged b	unung						
Self Preparation and Review								
Related subjects								
None								
None								
Notes for textbook								
Notes for reference								
Goals to be achieved								
To understand structural design t	hrough learning the	e seismic evaluatio	n method of structu	ral member and buil	ding.			
To understand structural design through learning the seismic evaluation method of structural member and building								
Figure of achievement								
Report								
Penert								
- cxaminauon								
Details of examination								
Other information								
Professor Taiki Saito (D805), e-mail: tsaito@ace.tut.ac.jp (Room: D-805)								
Professor Taiki Saito (D805), e-mail: tsaito@ace.tut.ac.jp (Room: D-805)								
Reference URL								

http://www.rc.ace.tut.ac.jp/saito/index-e.html http://www.rc.ace.tut.ac.jp/saito/index-e.html Office hours Please contact by e-mail to make an appointment. Please contact by e-mail to make an appointment.

Relations to attainment objectives of learning and education

Key words