										未更新
Course nu	ımbe	er U-EN	G29 22	2050 LJ10	U-EN	G29	) 22050	LJ55		
Course title (and course title in English)	工業 App	€数学 A 1 lied Mathem	atics A	.1		Inst nan and of a	tructor's ne, job til I departn affiliation	tle, nent	Graduate Sch Associate Profes	1001 of Informatics sor,SHIBAYAMA MITSURU
Target yea	r	2nd year students	or above	Number	of cred	its	2	Year	/semesters	2023/Second semester
Days and perio	ods T	'hu.2	Class	style	Lecture	e			Language of instruction	Japanese
[Overview	anc	l purpose c	of the	course]						
Complex and mathematica apply it to co	alysi: ป ana ompเ	s, traditionall alysis that inv ate some integrated	y knov 'estigat gral.	vn as the th tes functior	eory of s of cor	fune nple	ctions of ex numb	f a con ers. St	nplex variable tudents will st	, is the branch of udy the foundation and
[Course o	bjec	tives]								
To understar mathematics	nd pr 3 and	operties of co physics.	mplex	functions	with a s	,kill	for eval	uation	of integrals a	ppearing in applied
[Course s	cheo	dule and co	ntent	s]						
<ol> <li>Complex</li> <li>Holomorp</li> <li>Elementar</li> <li>Integrals i</li> <li>Cauchy's</li> <li>Power ser</li> <li>Taylor ser</li> <li>Isolated s</li> <li>Laurent ser</li> <li>Multival</li> <li>Analytic</li> <li>Residue</li> <li>Integrals</li> <li>Applicat</li> <li>Point at</li> </ol>	funct hic f ry fun in the integ ries ries ries ries ingul eries ued f cont s incl tion t	tion functions nctions complex pla ral theorem arities functions tinuation uding trigonc o improper i ity and Riem	ne ometric ntegra ann sp	c functions l here						
[Course re	equi	rements]								
Calculus, Li	near	algebra								
[Evaluatio	n m	ethods and	polic	;y]						
Evaluation d	lepen	ids mainly on	marks	s of examin	ation, b	ut n	harks of	exerci	ises are taken	into account when
[Textbook	[Textbooks]									
Not used										
								,	Continue to	工業数学A1 <b>(2)</b>

# 工業数学A1**(2)**

# [References, etc.]

# (Reference books)

Lars V. Ahlfors Complex Analysis (McGraw-Hill Education) ISBN:978-0070006577

### (Related URLs)

(KULASIS)

### [Study outside of class (preparation and review)]

Students need to solve exercises.

### (Other information (office hours, etc.))

Course nu	umber	U-ENG	G25 2205	55 LJ55	U-EN	G25	22055	LJ75				
Course title (and course title in English)	工業数 Applied	学F1(検 □Mathema	幾材エネ原 utics for B	亰:学番 Engineeri	奇数) ing F1	Inst nan and of a	tructor's ne, job tit I departm Iffiliation	tle, nent	Graduate Sch Associate Profes	nool of Engineering ssor,NISHIKAWA MASAAKI		
Target yea	<b>r</b> 2nd y	ear students o	or above <b>Nu</b>	umber o	of cred	its	2	Year	r/semesters	2023/Second semester		
Days and perio	ods Tue.:	3	Class s	tyle	Lecture	e			Language of instruction	Japanese		
[Overview	and pu	urpose o	f the co	urse]								
[Introduction to complex analysis and some applications]												
The objective is to explain the fundamentals of complex analysis, considering the application to engineering and science. The differential and integral calculus of complex functions, the relevant basic ideas, and the applications are introduced.												
Understandi	ng the ba	asics of co	omplex a	nalysis a	nd obtai	inin	g ability	to pra	actice it			
[Course s	chedul	e and co	ntents]									
<ol> <li>Definition</li> <li>Differen</li> <li>Concep</li> <li>Line integ</li> <li>Cauchy</li> <li>Cauchy</li> <li>Taylor</li> <li>Taylor</li> <li>Taylor</li> <li>Applicat</li> <li>Concept</li> <li>Feedbac</li> <li>Confirmatio</li> </ol>	n of com ntial of c t and exa ral of c 's theore and Lau and Lau and Lau and Lau and confo of confo k n of lear	plex and c complex fur amples of omplex fur m and inte urent serie ts and resi efinite inte ormal map ning achie	complex p inctions a regular f nctions egral forr s idue theo egral oping, oth evement:	plane and Cauc unctions nula rem er topics Regular	chy-Rien s examin	man	n relatio	on				
[Course re	equiren	nents]										
Fundamenta	ls of dif	ferential a	nd integr	al calcul	us							
[Evaluatio	on meth	ods and	policy]									
【Evaluation Evaluation v In some case (In these case 【Evaluation Evaluation v	Evaluation method Evaluation will be mainly based on regular examination. In some cases, evaluation for homework (short reports: about four times) will be also considered. In these cases, the ratio of the evaluations for regular examination and homework is about 9:1.) [Evaluation standard] Evaluation will be based on class registration guideline.											

工業数学F1(機材エネ原:学番奇数)(2)

### [Textbooks]

A. Fujimoto <sup>©</sup> Outline of complex analysis (Fukuso-kaisekigaku Gaisetsu)<sup>1</sup> (Baifukan) ISBN:978-4563005719 (in Japanese, published in 1990.)

# [References, etc.]

### (Reference books)

To be referred to during the course

## [Study outside of class (preparation and review)]

Homework (short reports) for the problems stated in the textbooks will be assigned.

# (Other information (office hours, etc.))

Course nu	umbe	er	U-E	NG25 2	22055 LJ5	55 U-EN	G25	5 22055	LJ75		
Course title (and course title in English)	工業 Appi	数学 lied	F 1 ( Mather	(機材コ matics	ニネ原:学 for Engine	を番偶数) eering F1	Inst nan and of a	tructor's ne, job tit I departm affiliation	tle, nent	Part-time Leo	cturer,
Target yea	r 2	2nd ye	ear studen	nts or abov	e Numbe	er of cred	lits	2	Year	/semesters	2023/Second semester
Days and perio	ods T	ue.3		Clas	s style	Lectur	e			Language of instruction	Japanese
[Overview	and	l pu	rpose	of the	e course	]					
Introduction	to co	ompl	lex ana	lysis ar	nd some a	pplication	8				
[Course o	bjec	tive	s]								
Understandi	ng th	e ba	sics of	comple	ex analysi	s and obta	inin	g ability	to pra	actice it	
[Course s	chec	dule	and o	conten	its]						
Basic knowl detection. Intrusion De based IDS b issued from Intrusion De traffic by ma Presentation machine lear	edge etection y stud IDS a etection achin ,1tim rning	on t on b dyin and on b e lea ne,Ba c, and	y Signa g open commu y Mach urning a ased or l discu	ature-B a source unication hine Le algorith n the ex ss it wi	ased IDS, signature ons, and ac arning,7ti ums and p ercise, stu th other st	5times,Le ork security 5times,Le e-based ID dding sign mes,Learn ublic datas idents pres tudents and	arn t arn t S an ature the set fo sents d ins	the mech d attack es to det method or bench s their m structors	nanism nanism s, such ect att of cla umarki ethods	e learning can of intrusion h as correspon acks. Issifying norm ng intrusion d s of intrusion d	detection by signature- idence between alarms al and malicious letection performance. detection using
[Course re		rem	ents]		. 1 1	1					
Fundamenta	ls of	diffe	erential	l and in	tegral cal	culus					
[Evaluatio	on m	etho	ods ar	nd poli	cy]						
Regular exa	mina	tion	and Re	eports							
[Textbook	s]										
To be referre	ed to	duri	ng the	course	(Nishikay	wa), Not u	sed (	(Muraka	umi)		
[Reference	es, e	etc.]									
(Referen	nce l	000	ks)								
To be referre	ed to	duri	ng the	course							
[Study ou	tside	e of	class	(prepa	aration a	and revie	w)]				
( Other in	form	atic	on (off	ice ho	urs, etc.	))					

Course nu	umber	U-EN	G29 320	60 LJ10	U-ENG	29 32060	LJ54	U-ENG29 3	2060 LJ55
Course title (and course title in English)	工業数 Applied	学 A 2 Mathema	atics A2		lı r a c	nstructor's ame, job ti nd departr f affiliation	tle, nent	Graduate Scl Associate Profes Graduate Scl Associate Profes	nool of Informatics sor,SHIBAYAMA MITSURU nool of Informatics ssor,YOSHIKAWA HITOSHI
Target yea	<b>r</b> 3rd y	ear students of	or above <b>N</b>	umber o	of credit	<b>s</b> 2	Year	r/semesters	2023/First semester
Days and perio	ods Mon	.2	Class s	style	Lecture			Language of instruction	Japanese
[Overview	and p	urpose o	f the co	ourse]					
曲線や曲面 また、多様	に対す 体の定	る微分幾 義や、ベ	何や位相 クトル角	目幾何の 军析で学	基礎を習 んだ積分	得する。 <sup>·</sup> 定理の抓	な張でる	あるストーク	<sup>7</sup> スの定理を理解する。
工学に現れ また偏微分	る偏微: 方程式(	分方程式 の解析的	を紹介す な解法や	ける。 ▷数値的	な解法に	ついて訪	明す	る。	
[Course o	bjectiv	es]							
曲線や曲面 数値的に解	の幾何 く能力	的な性質 を身に着	を理解し けること	J、多様 ≤を目標	体の概念 とする。	を理解す	るこ	と、および簡	簡単な偏微分方程式を
[Course s	chedul	e and co	ntents]						
曲 線 の 曲 面 の 例 オ の の オ イ 定 ス ト ー ク ス 学 習 到 達 度	と捩率、 その曲 ラー標 義(1回) の確認(	まつわ 率(2回) 数とガウ (1回) (1回)	り数(2回 ス・ボン	<sup>])</sup> ノネの定	理(1回)				
工学に現れ 偏微分方程 1次元問題の 偏微分方程 学習到達度	る偏微 式の境 の解析的 式の数 の確認(	分方程式 界値問題 J解法(1回 値的解法 (1回)	の紹介(1 (1回) l) (3回)	1回)					
[Course re	equiren	nents]							
微分積分学	A, B,	線型代数	效学A、	B、 微分	<b>}</b> 積分学	売論I、 II	-		
[Evaluatio	on meth	ods and	policy]						
必要に応じ よる。	て行う 	レポート	の提出∜	犬況(平	常点)も 	,加味しこ	) つ、 ;	基本的には中	□間試験と期末試験に
							(	Continue to	工業数学A2 <b>(2)</b>

工業数学A 2 (2)

## [Textbooks]

Not used

#### [References, etc.]

#### (Reference books)

小林 昭七 『曲線と曲面の微分幾何』(裳華房,1995年)ISBN:978-4785310912 松本幸夫 『トポロジーへの誘い』(遊星社,2008年)ISBN:978-4434116261 松本幸夫 『多様体の基礎』(東京大学出版会,1988年)ISBN:978-4130621038 J.W. ミルナー 『微分トポロジー講義(蟹江訳)』(丸善出版,2012年)ISBN:978-4621062722 以上は前半の内容に関する参考書である。 後半の内容については講義中に紹介する。

#### (Related URLs)

( )

#### [Study outside of class (preparation and review)]

演習問題を出題するので、自力で解くように。

(Other information (office hours, etc.))

								未更新				
Course number	U-ENG25 3	2065 LJ55	U-ENC	<del>3</del> 25 3	32065 ]	LJ75						
Course title (and course title in English)	Course title (and course title in English)       工業数学F2(機:学番奇数)       Instructor's name, job title, and department of affiliation       Graduate School of Informatics Professor,KANOU MANABU Graduate School of Informatics Professor,OHTSUKA TOSHIYUKI											
Target year 3rd y	ear students or above	Number	of credi	t <b>s</b> 2	2	Year	/semesters	2023/First semester				
Days and periods Tue.2	2 Clas	s style	Lecture				Language of instruction	Japanese				
[Overview and purpose of the course]												
Fourier analysis and its application will be described. The major part consists of Fourier series, Fourier transform, and Laplace transform.												
[Course objective	es]											
The goal is to unders	stand the basics	and applica	ations of 1	Four	ier ana	lysis.						
[Course schedule	e and conten	ts]										
Preliminaries, 1 time, Fourier analysis is be Fourier series, 1 time, Complex Fourier ser described. Characteristics of Fo Fourier transform, 1 ti Characteristics and a and its applications. Linear systems, 1 time using Fourier series of explained. Summary of the first examination will be Parseval#039s equal and the relationship described. Introduction to partia Solutions of the wav partial differential ec Fourier series for sol derived in the form of Introduction to Lapla solving ordinary diff Laplace transform for by applying Laplace Discrete Fourier tran	The goal and ou riefly reviewed. Fourier series e ies, 1 time, Comp ourier series, 1 tim ime, In order to opplications of F e, Linear system expansion. In ac t half, 1 time, A su given. ity and its appli between impuls al differential ec re equation and quations, is solv lving the wave ec of Fourier series ace transform , 1 ferential equation transform and fast	atline of this expansion of plex Fourier ne,Characte cope with a Fourier trans as is describe ddition, imp ummary of cations,1tin se responses quations,1tin their physic red and phys equation,1tin s expansions time,Laplac ons. ary differen its inverse to Fourier trans	s class are f periodic series, if eristics of periodic sform is e ed. Solut pulse resp Fourier s me,Parsev and cross me,Basic cal interprisical inter me,Anoth s. ce transform usform ,1	e pre funct s dif Fou funct expla ions oonse eries val#0 os-co noti retati rpret her e orm a tions	esented ctions ferenti- inier se- tions, l ained to of line es and F 039s eq rrelations of sons, 1t ations of ions, 1t ations express and its s, 1time , Discree	I. Then is desc ial and ries ar Fourie ogethe ear diff transfe fourier puality on fun partia ime,TI of its ions o charace ,Ordin	a, basic knowl cribed. I integral, and e described. r transform is for with the Par ferential equate r functions of transform is p , the Wienern ctions in linea I differential of he wave equates solutions are of f solutions to cteristics are of hary differential urier transform	edge necessary to learn spectrum are described. rseval#039s equation tions are given by f linear systems are provided, and an dashKhinchin theorem, ar systems are equations are described. tion, one of important discussed. the wave equation are described aiming at al equations are solved n for analyzing				
	ampled data is described. Continue to 工業数学 F 2 (機 : 学番奇数 ) (2)											

工業数学F2(機:学番奇数)**(2)** 

Evaluation of achievement, 1 time, The achievements are evaluated.

### [Course requirements]

None

#### [Evaluation methods and policy]

The regular examination, assignments, and attitude in the class will be taken into account.

# [Textbooks]

Shinichi Ohishi: Fourier Analysis, Iwanami-Shoten isbn{}{9784000077767}

#### [References, etc.]

(Reference books)

[Study outside of class (preparation and review)]

(Other information (office hours, etc.))

Course nu	ımbe	er	U-EN	G25 3	2065 LJ55	U-EN	G25	32065	LJ75		
Course title (and course title in English)	工業 App	€数章	学F2( Mathema	機: stics f	学番偶数) or Engineer	ing F2	Inst nan and of a	tructor's ne, job tit I departm affiliation	le, ient	Graduate Sch Senior Lectur	ool of Engineering rer,SENAMI MASATO
Target yea	r	3rd ye	ear students o	or above	Number	of cred	its	2	Year	/semesters	2023/First semester
Days and perio	r sba	Tue.2	2	Clas	s style	Lecture	e			Language of instruction	Japanese
[Overview	and	d pu	irpose o	f the	course]						
[Course o	bjec	ctive	es]								
[Course s	che	dule	and co	nten	ts]						
,2times,											
,2times,											
,201files, 2times											
.3times,											
,3times,											
,1time,											
[Course re	equi	irem	ents]								
None											
[Evaluatio	n m	eth	ods and	polie	cy]						
[Textbook	s]										
[Referenc	es, e	etc.]									
( Referer	nce	boo	ks)								
[Study ou	tsid	e of	class (p	orepa	ration and	d revie	w)]				
(Other in	orn	natio	on (offic	e hoi	urs, etc.))	I					
*Please visit	KU	LAS	SIS to find	d out a	about office	hours.					

		_								不足利	
Course n	umber	U-E	NG25 320	)65 LJ55	U-EN	G25	32065	LJ75			
Course title (and course title in English)	工業数 Applied	(学F2 d Mather	(材) matics for	Engineer	ing F2	Inst nan and of a	tructor's ne, job ti I departn Iffiliation	tle, nent	Graduate Scl Associate Pro Graduate Scl Associate Prof	1001 of Engineering ofessor,ICHII TAKASHI 1001 of Engineering čessor,YUGE KORETAKA	
Target yea	<b>r</b> 3rd	year student	ts or above <b>N</b>	lumber	of cred	lits	2	Year	r/semesters	2023/First semester	
Days and peri	ods Tue.	.2	Class s	style	Lectur	e			Language of instruction	Japanese	
[Overview and purpose of the course]											
Fourier analysis, Laplace transform, Linear Algebra and their applications.											
[Course objectives]											
The final goal of this course is to understand basics of Fourier series expansion, Fourier transform, Laplace transform and Linear Algebra, and to learn to make full use of these mathematical tools in analyzing various physical phenomena and solving relevant differential equations. Particular emphasis is placed not on pursuing mathematical rigor but on developing skills to perceive different physical aspects of these tools and select the most appropriate one in practical problem solving.											
[Course s	chedu	le and c	contents]	]							
complex and and their apj their Fourier transform (2 Fourier tran transform -a Map and ma	alysis (1 plication r series o 2-3 week sform -1 applicati atrix App	-2 weeks nsDelta f expansio (ss) -basic inear res ons of La plications	s) -comple function (1 on -comple cs of Fouri sponse syst aplace tran s of Fourie	ex numbe l week)Fo ex Fourier ier transfo temLapla nsform to er transfor	rs and c ourier se r series o orm -con ace trans o linear s rm and l	omp eries expa nvol forn syste Lapl	expansion -a unsion -a ution an n and its emsLine ace tran	ctions ion (2- applica id corr s appli ar Alg	-complex inte -3 weeks) -per ations of Four relation functi cations (2 weeks) (1-2 weeks)	grals, residue theorem, iodic functions and ier seriesFourier on -applications of eks) -basics of Laplace eks) - Vector space -	
[Course r	equirer	ments]									
Prerequisite	subject	s: compl	ex number	rs and bas	sic calcu	ılus.					
[Evaluatio	on meth	nods an	nd policy	]							
The grading	is made	e based o	on the regu	ılar exam	ination.						
[Textbook	(s]										
Lecture note	es are di	stributed	l at the cla	SS.							
[Referenc	es, etc	.]									
(Refere	(Reference books)										
[Study ou	tside o	of class	(prepara	ation and	d revie	w)]					
( Other in	format	ion (off	ice hour	s, etc.) )							

										未更新
Course nu	umber	U-I	ENG25 32	2065 LJ55	U-EN	G25	; 32065	LJ75		
Course title (and course title in English)	工業 Appli	数学 F 2 ied Mathe	(エネ原 ematics fo	京) or Engineer	ring F2	Inst nan and of a	tructor's ne, job ti I departn affiliation	tle, nent	Graduate Sch Professor,ISI Graduate Sch Associate Pro	1001 of Energy Science HIZAWA AKIHIRO 1001 of Energy Science fessor,IMADERA KENJI
Target yea	<b>r</b> 31	rd year stude	ents or above	Number	of cred	lits	2	Year	/semesters	2023/First semester
Days and perio	ods Fri	i.4	Clase	s style	Lecture	e			Language of instruction	Japanese
[Overview	and	purpos	e of the	course]						
[Course o	bject	ives]								
[Course s	ched	ule and	content	is]						
, 9 times,										
, 2 times,										
, <b>5</b> times,										
[Course re	quire	ements]								
None										
[Evaluatio	n me	thods a	ind polic	cy]						
[Textbook	s]									
[Reference	es, et	tc.]								
(Referer	ice b	ooks )								
[Study ou	tside	of class	s (prepa	ration and	d revie	w)]				
( Other inf	iorma	ation (of	ifice hou	urs, etc.) )	)					
*Please visit	KUL	ASIS to :	find out a	bout office	hours.					

Course nu	umber	U-EN	G29 32070 LJ10	U-EN	G29	32070	LJ55				
Course title (and course title in English)	工業数: Appleid	学A 3 I Mathem	atics A3		Instructor's name, job title, and department of affiliation Graduate School of Inform Professor, YAGASAKI KA				nool of Informatics AGASAKI KAZUYUKI		
Target yea	<b>r</b> 3rd y	ear students	or above <b>Number</b>	of cred	lits	2	Year	/semesters	2023/First semester		
Days and perio	ods Wed	.1	Class style	Lecture	e			Language of instruction	Japanese		
[Overview	and pu	urpose c	of the course]								
Fourier analysis originated in Fourier's work on thermal conduction and now becomes very important not only in mathematics but also in engineering, including applications in measurement technology. This course provides its theories and applications along with the Laplace transforms closely related to it.											
[Course o	bjectiv	es]									
To understan apply them t	To understand the fundamental theories of Fourier analysis and Laplace transforms and develop an ability to apply them to concrete problems.										
[Course s	chedul	e and co	ontents]								
Fourier serie The definition as computation Properties and Several prop processing a One-dimens The definition inversion for Laplace tran Fundamenta Summary and A summary	es expans on of Fou- ion of Fou- ion of Fou- perties of re discus ional Fo- on of one rmula an sforms, 1 propert and supp	sions, 3-4 urier serie ourier coe cations of Fourier s ssed. urier trans e-dimensi id applica 2-3times: ties of Laj ng achiev plements	times: s expansions for p fficients and conv Fourier series, 3- series and their ap sform, 4-5 times: onal Fourier trans tions to partial dif place transforms a ement evaluation, of this course are	periodic vergence 4 times: oplicatio sforms is fferentia and their , 1 time: given an	e fun e of : ns to s giv ll eq r app	ctions a Fourier o differe ven, and uations plication	re give series ential a their f are dis as are o ing ach	en and their fu are discussed and difference fundamental p scussed. discussed.	indamental results such equations and signal properties such as the		
Calculus Li	equiren	nentsj	Differential Equa	tions							
	Calculus, Linear Algebra and Differential Equations										
[Evaluatio	[Evaluation methods and policy]										
Evaluation d	lepends 1	mainly or	ι marks of mid-ter	rm exan	ninat	tions (20	0%) an	nd final one (8	30%).		

\_\_\_\_\_Continue to 工業数学A 3 (2)

# 工業数学A3**(2)**

### [Textbooks]

S. Nakamura Fourier Analysis (Asakura shoten, 2003) ISBN:9784254115741

### [References, etc.]

#### (Reference books)

H.Fukawa <sup>®</sup>Mathematics of control and vibration<sup>a</sup> (Korona-sha)

### [Study outside of class (preparation and review)]

Prepare and review the lectures and solving the problems given on KULASIS or PANDA to understand the contents of the textbook and lectures.

## (Other information (office hours, etc.))

										未更新
Course nu	ımbe	er U-	-ENG25 32	2075 LJ55						
Course title (and course title in English)	工業 App	該数学 F lied Math	3(機原) nematics fc	or Engineer	ing F3	Inst nan and of a	ructor's ne, job tit departm ffiliation	ile, ient	Graduate Scl Professor,IN	nool of Engineering OUE YASUHIRO
Target yea	r	3rd year stud	lents or above	Number	of cred	its	2	Year	/semesters	2023/Second semester
Days and perio	ods F	ri.2	Class	style	Lecture	e			Language of instruction	Japanese
[Overview	and	l purpos	se of the	course]	1					
Introduction	to sp	pecial fur	ictions and	mathemat	ical met	hods	s for the	physic	cal sciences.	
[Course o	bjec	tives]								
Understandi problem solv	ng sp ving	ecial fun skills.	ctions and	mathemati	ical met	hods	s for the	physic	cal sciences, a	and developing
[Course s	ched	dule and	d content	s]						
Confluent hy Gamma and Bessel funct Generalized Green#039s Partial differ Short Exam	Jory Jperg Beta ion,2 func func entia and	geometric function times, tion,2tim tion,1tim al equatio Discussio	function,1 s,2times, les, he, ons for phy on,1time,	time, sical scienc	ces,2tim	es,				
[Course re	qui	rements	\$]							
Theories of	comp	olex func	tion and di	fferential e	quation					
[Evaluatio	n m	ethods	and polic	y]						
The course g	grade	will be t	based on ho	omework(3	0%) and	d qu	izzes(70	)%).		
[Textbook	s]									
[Referenc	[References, etc.]									
( <b>Referer</b> Mathematica 9780123846	<b>nce</b>   al Me 549}	books ) ethods fo	r Physicist	s, George I	3. Arfke	n an	d Hans	J. Weł	per (Academi	c Press) isbn{}{
[Study ou	tside	e of clas	ss (prepa	ration and	d revie	w)]				
( Other in	orm	nation (c	office hou	<b>rs, etc.)</b> )						

Course nu	umber	U-EN	G25 32	2080 LJ52	U-EN	G25	32080	LJ57	U-ENG25 3	2080 LJ71
Course title (and course title in English)	工業ナ Engine	]学A(機 eering Mecl	・宇) hanics	) A		Inst nan and of a	ructor's ne, job tit I departm Iffiliation	ile, ient	Graduate Sch Associate Profe Graduate Sch Professor,HA	nool of Informatics essor,NISHIHARA OSAMU nool of Engineering ANAZAKI HIDESHI
Target yea	<b>r</b> 3rd	year students of	or above	Number	of cred	its	2	Year	/semesters	2023/First semester
Days and perio	ods We	d.2	Class	s style	Lecture	e			Language of instruction	Japanese
[Overview	and p	ourpose o	f the	course]						
[Course o	bjectiv	ves]								
[Course s	chedu	le and co	ntent	s]						
[Course re	equire	ments]								
None										
[Evaluatio	n met	hods and	polic	;y]						
[Textbook	s]									
[Referenc	es, etc	<b>:</b> .]								
( Referei	nce bo	ooks)								
[Study ou	tside o	of class (p	orepa	ration and	d revie	w)]				
( Other int	format	tion (offic	e hoı	ırs, etc.) )						
*Please visit	KULA	ASIS to find	l out a	bout office	hours.					

Course nu	umbe	ər	U-ENG	G25 32	2080 LJ52	U-EN	G25	32080	LJ57	U-ENG25 32	2080 LJ71
Course title (and course title in English)	工業 Eng	≦力芎 ineer	ŹA (エ ing Mecl	ネ) hanics	А		Inst nan and of a	ructor's ne, job tit I departm ffiliation	le, ient	Graduate Sch Associate Profess	ool of Energy Science or,KINOSHITA KATSUYUKI
Target yea	r	3rd ye	ar students o	or above	Number	of cred	its	2	Year	/semesters	2023/First semester
Days and perio	ods N	/Ion.1	[	Class	s style	Lecture	e			Language of instruction	Japanese
[Overview	and	d pu	rpose o	f the	course]						
[Course o	bjec	tive	s]								
[Course s	che	dule	and co	ntent	s]						
, 4 times,											
, 3 times, . 2 times.											
, 2 times,											
, 2 times,											
, z times,											
[Course re	equi	rem	ents]								
None											
[Evaluatio	n m	etho	ods and	polic	;y]						
Textbook	sl										
-	-										
[Reference	es, e	etc.]									
( Referer	nce	boo	ks)								
[Study ou	tsid	e of	class (p	orepa	ration and	d revie	w)]				
(Other in	form	natio	on (offic	e hou	urs, etc.) )						
*Please visit	t KU	LAS	IS to find	i out a	bout office	hours.					

								未更新
Course nu	umber	U-ENG20 42	105 LJ77					
Course title (and course title in English)	工学倫 <sup>I</sup> Enginee	理 ring Ethics			Instructor's name, job tit and departm of affiliation	tle, nent	Graduate Sch Professor,SO Graduate Sch Professor,ICI Graduate Sch Professor,Sh Graduate Sch Senior Lecture Graduate Sch Professor,ISH Center for the Promotion Program-Specific A Graduate Sch Professor,SU Graduate Sch Professor,IM Graduate Sch Professor,IM Office of Society-Ad NAKAGAW Graduate Sch Professor,OC Graduate Sch Professor,TA Graduate Sch Professor,TA Graduate Sch Professor,TA Graduate Sch Professor,TA Graduate Sch Professor,ITC Graduate Sch Professor,ITC Graduate Sch Professor,ITC Graduate Sch Professor,ITC Graduate Sch Professor,OC Graduate Sch Professor,ITC Graduate Sch Professor,SU Graduate Sch Professor,SU	nool of Engineering DTOWA KENICHIRO nool of Management HIKAWA YUTAKA nool of Engineering u Seki nool of Engineering r,HIGASHIGUCHI KENJI nool of Letters EDA TETSUJI of Interdisciplinary Education and Research ssistant Professor,SHIMIZU YUYA nool of Engineering GIYASU KAZUNORI nool of Engineering AHORI HIROSHI nool of Informatics MENO KEN cademia Collaboration for Innovation A MASAYUKI nool of Engineering DSAKI MAKOTO nool of Engineering SAKI MAKOTO nool of Engineering SHIWAKI SHINJI nool of Engineering SHIWAKI SHINJI nool of Engineering DYADA TAKU nool of Engineering DYADA TAKU nool of Engineering SAKI JUNICHI nool of Engineering NAGI JUNICHI nool of Engineering NAGI JUNICHI nool of Engineering NACI JUNICHI nool of Engineering NADA TAKU nool of Engineering NADA TAKU NAS
Target yea	<b>r</b> 4th ye	ear students or above	Number o	of cred	its 2	Year	/semesters	2023/First semester
Days and perio	ods Thu.3	3 Class	style	Lecture	<u>,</u>		Language of instruction	Japanese
[Overview	and pu	irpose of the c	course]					
Modern ethi Instructors f	cs based rom vari	on engineering a ous faculties give	aspect are b e lectures a	becomin bout eth	ng essential hics in their	to pres resear	sent engineers rch fields.	s and scientists.
[Course o	bjective	es]						
The goal of you encount	this class er ethica	s is to understand l issues.	l engineerir	ng ethic	s, and to de	velop	the ability to	judge by yourself when
[Course s	chedule	e and contents	s]					
(4/8) The ce (4/15) " Ge	ntral topi neral res	ic is what is ethic earch ethics"	cs for engin	neers an	d what is si	gnific	ance of studyi	ng ethics for engineers.
	■				<b>_ </b>	(	Continue to	工学倫理 <b>(2)</b>

工学倫理**(2)** Lectures on the concept of writing academic papers with ethics. (4/22) " Ethical Theories for Engineering Ethics ' This lecture focus on various ideas in ethics (utilitarianism, deontology, virtue ethics, professional ethics etc.) which will be useful for thinking about particular ethical problems in engineering ethics. This Lecture will be conducted online by using zoom. (5/6) "Engineering Ethics as a Professional Ethics:" This lecture discusses basic ideas of engineering ethics in comparison with other fields of applied ethics. In particular, it discusses the characteristics of engineering ethics as professional ethics and what engineers as professionals are required to do. (5/13) " Ethics for Engineers " Engineers have to go through some ethical issues about research, development, design, manufacturing, and maintenance. In particular, the ethical decisions of engineers need to be considered for society and environment. (5/20) Press Release is an essential process for introducing the research to our society through various medias. In this lecture, issues related to Press Release will be addressed and discussed with several examples including SNS release. Lecture will be conducted by Zoom. (5/27) "Ethics in Water Supply." It is a basic right in a society that a person can receive and use safe water in sufficient quantity. In addition, a person of water supply utility is recognized to be an essential worker. Taking drinking water supply as a topic, ethics required for a water supplier and an engineer is discussed. It is given by Zoom. (6/3) "Forensic Analysis" Forensic repots are sometimes requested by the court in order to clarify the charge of incidents. The nylon rope incident, the Wakayama curry poisoning incident, and the pig iron incident are explained as examples. How to write the forensic report is explained in order to avoid the ethical problems. (Zoom&Youtube) (6/10) "Patents and Ethics (Part 1)" This course will teach the students about 1) patent systems which protect inventions and research results and 2) ethical issues in patents. The first class, in preparation for the next subject of patent ethics, introduces Japan's patent system with comparisons to the patent systems in the world's major countries and international framework. (6/17) "Patents and Ethics (Part 2)" Students, equipped with the basic knowledge of patent systems by the previous lecture, will get familier with actual case studies on ethical and legal issues in patents. (6/24) "Urban Planning and Ethics" The lecture focuses on the norms regulating the actions of the engineers involved in planning and designing urban areas, as well as on the normative consciousness required to facilitate such planning and design, demonstrating some examples on urban transport planning. This will be given via Zoom. (7/1) "General research ethics of synthetic chemistry" Lectures on the concept of writing academic papers and patents of synthetic chemisty with ethics. (7/8) Architecture has developed by imitating beautiful buildings, but in recent years there has been an increase in the number of cases where copyright disputes have arisen. In addition, the appearance of architecture often causes landscape controversy because of its influence on the surrounding environment. Issues concerning the ethics and sociality of architecture are discussed while introducing overseas lawsuits and design processes. (7/15) The materials engineer may stand on the side using materials as well as a side supplying materials.

Some examples are introduced and, by this lecture, are argued about an ethic found from each situation by materials engineer. Note that this lecture is going to be carried out in ZOOM, but may be changed to the ondemand on account of the speaker.

Continue to 工学倫理(3)

#### 工学倫理**(3)**

(7/29) "Engineer ethics in mechanical design"

Engineer ethics is not a passive and passive thinking that issues the action of simply following existing norms, but a more active and creative thinking to decide and design one's own actions. It requires the logical thinking and ethical thinking necessary for engineers. This is explained with past cases in mechanical design.

#### [Course requirements]

None

#### [Evaluation methods and policy]

Class participation and reports.

#### [Textbooks]

Lecture materials will be distributed.

#### [References, etc.]

#### (Reference books)

<sup>©</sup> Omnibus Engineering Ethics <sup>\_</sup> (Kyoritsu Shuppan Co., Ltd. ) ISBN:978-4320071964

<sup>®</sup> Practical Engineering Ethics - A Short Course, New Edition J (Kagaku-Dojin Publishing Company, INC) ISBN:9784759811551

<sup>®</sup>Engineering Ethics (Revised Edition)<sup>®</sup> (CORONA PUBLISHING CO.,LTD.) ISBN:978-4-339-07798-8

<sup>©</sup> World of Engineering Ethics (3rd Edition) <sup>\_</sup> (Morikita Publishing Co., Ltd. ) ISBN:978-4-627-97303-9

# [Study outside of class (preparation and review)]

The assignment of the report will be given for each lesson.

# (Other information (office hours, etc.))

The class order is subject to change.

\*Please visit KULASIS to find out about office hours.

# [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

										未更新		
Course nu	umbe	er U-ENG	G20 12	2108 LJ77								
Course title (and course title in English)	工学 Intro	序論 oduction to Er	nginee	ring		Inst nan and of a	ructor's ne, job tit departm ffiliation	ile, nent	Graduate Scl Associate Prof	raduate School of Engineering ssociate Professor, TAKATSU HIROSHI		
Target yea	r	1st year students o	or above	Number	of cred	lits	1	Year	/semesters	2023/Intensive, First semester		
Days and perio	ods I	ntensive	Class	s style	Lectur	e			Language of instruction	Japanese		
[Overview	and	l purpose o	f the	course]								
Engineering is to inquire after truth, to develop useful technologies, and to establish ways how to give back development results of technology to the society. First, we offer special lectures regarding the basic knowledge that students in faculty of engineering are expected to have. Then, we offer a series of intensive lectures about how engineering can suggest solutions of current and future problems of our society, the value of technology, and the responsibilities that researchers and engineers are expected to fulfill.												
[Course o	bjec	tives]										
[Course objectives] Students learn basic matters such as attitudes and responsibilities they are expected to take as a member of social community. They find value in studying engineering and become to consider what they do in future by understanding technology can suggest solutions of problems our society is facing, especially problems about safety and security.												
[Course s	chec	dule and co	ntent	s]								
Special lecturole of engine Intensive lecturole and technologic reconfirming be opportunit content and Schedule of	ares, 1 neerir ctures ogy. I g imp ities ( opini the lo	time, About ng in society. s,6times, A se Lectures are f portance to stu to consider ov ions of other s ectures are an	basic l ries of or und idy en idy en vn futi studen nounc	f lectures of lerstanding gineering a ure path. Es ts.	and atti ffered b the role ind to w ssays ar	tude y sp tha ork e ass	as stude ecial lec t techno as a rese signed in	ents w cturers logy is earche n ever	ho start to lea playing on g s playing in n r and enginee y lecture to su	Irn engineering, and the lobal stages of science nodern society, for r in society, and are to immarize the lecture		
[Course re	equi	rements]										
None												
[Evaluatio	n m	ethods and	polic	;y]								
Evaluation v	vill b	e based on pa	rticipa	ation and es	ssays as	sign	ed in ev	ery in	tensive lectur	e.		
┌ - <b></b> .								(	Continue to	工学序論 <b>(2)</b>		

# 工学序論**(2)**

### [Textbooks]

Specify if necessary.

# [References, etc.]

(Reference books)

Specify if necessary.

# [Study outside of class (preparation and review)]

Specify if necessary.

# (Other information (office hours, etc.))

Information about lecturers and contents of lectures are announced on electric bulletin boards. Please confirm to your department office that the credit of this course is admitted to graduation requirements.

										未更新			
Course nu	umbe	er U-EN	G20 32	2402 SE77									
Course title (and course title in English)	工学 Facul	部国際イン Ity of Engineer	ッターン ing Inter	ハシップ 1 mational Inte	ernship 1	Inst nan and of a	ructor's ne, job ti I departn Iffiliation	tle, nent	Graduate School of Engineering Senior Lecturer,KOWHAKUL, Wasar Graduate School of Engineering Professor,HONDA MITSURU				
Target yea	r :	3rd year students	or above	Number	of cred	its	1	Yea	r/semesters	2023/Intensive, year-round			
Days and perio	ods I	ntensive	Class	style	Semina	ar			Language of instruction	Japanese and English			
[Overview	and	l purpose o	of the	course]									
Acquisition hosted by th	of in e Un	ternational sliversity, the	kills wi Faculty	th the train of Engine	ing of for ering, o	oreig r the	gn langu e underg	age th raduat	brough the interest the school the a	ernship programs applicant belongs to.			
[Course o	bjec	tives]											
The acquisit hosted by th	tion o te Un	f internation iversity is th	al skills e major	s with the t expectation	training on to the	of fo	oreign la dents.	anguag	ge through the	to internship programs			
[Course s	cheo	dule and co	ontents	s]									
Overseas Int	ternsl	hip,1time,Th	e conte	nts to be a	cquired	shou	uld be d	escrib	ed in the broc	hure of each internship			
program.							• • •						
Final Presen	itatio	n,Itime,A pr	esentati	ion by the	student	is re	quired f	ollow	ed by discussi	on among participants.			
[Course re	equi	rements]											
Described ir language ski	n the a ills fo	application b or the particip	pooklet pation.	for each in	nternship	o pro	ogram. T	The reg	gistrant is requ	lested to have enough			
[Evaluatio	on m	ethods and	d polic	y]									
- Marit rating	is do	one based on	the pre	sentation of	or report	s aft	er each	intern	ship program.	Each Department			
responsible	to ide	entify if the c	redit ea	arned by th	is subje	ct to	be incl	uded a	as mandatory	ones or not. If the			
credit is not	inclu	ided in the up	ndergra	duate scho	ol in wh	nich rodi	the part	icipan	t belongs to, t	he credit is granted by			
determined	dener	nding on the	content	ts and the c	duration	of t	he prog	ram th	at the particin	ant has participated in.			
	P	8							F				
[Textbook	(s]												
					· ·		. – –		 Continue to 工学部	国際インターンシップ1(2)			

工学部国際インターンシップ1**(2)** 

### [References, etc.]

(Reference books)

#### [Study outside of class (preparation and review)]

#### (Other information (office hours, etc.))

It is required for students to check if the internship program to participate in could be evaluated as part of mandatory credits or not and could earn how many credits before the participation to the undergraduate school or educational program the student in enrolled. If the credit could not be treated as mandatory ones, get in touch with the Global Leadership Engineering Education Center.

\*Please visit KULASIS to find out about office hours.

#### [Courses delivered by instructors with practical work experience]

(1) Category

A course that includes off-campus training classes.

(2) Details of instructors ' practical work experience related to the course

							未更新					
Course number	U-ENG20 2	2403 SJ77										
Course title (and course title in English)	レ・リーダーシップセ ership Seminar I (Study f	zミナー I (企業調) or methodology in a c	查研究) Ins company) an of	structor's me, job ti d departn affiliation	tle, nent	Graduate School of Engineerin Senior Lecturer, hirai yoshikazu Graduate School of Engineerin Senior Lecturer, KOMIYAMA YO Graduate School of Engineerin Professor, HONDA MITSURU Graduate School of Engineerin Senior Lecturer, KOWHAKUL, W						
Target year 2nd y	year students or above	Number of	credits	1	Year	/semesters	2023/Intensive, year-round					
Days and periods Inter	nsive Clas	s style	Seminar			Language of instruction	nguage of instruction Japanese					
[Overview and purpose of the course]												
The purpose of this course is to study about how worldwide leading company, institute, etc. make proposals and find solutions for expanding their own technologies to the international market. Throughout hands-on training on their laboratory, students investigate the methodology of team organization, proposal, market prediction and conception ability by group works. After the investigation, students are expected to improve their comprehension and explanation capability. As extended exersice subject of this course, the Global Leadership Seminar II is opened in the second semester.												
[Course objective	es]											
The goal of this cour proposal and expansi work.	se is to improve ion on the intern	e student's co national mark	mprehens tet invesit	sion and igating v	explan vorldw	ation capabili vide leading c	ity for processes of ompanies by group					
[Course schedule	e and conten	ts]										
Week 1, Guidance Week 2-13, Hands-o Week 14, Pre-presen Week 15, Final prese	n training nation entation											
[Course requirem	nents]											
How to register will class.	be announced la	ater. Students	s who wa	nt to join	this co	ourse is reque	sted to attend the first					
[Evaluation meth	ods and polic	cy]										
Students are prohibit	ted to skip hand	s-on training.	. Evaluati	on will b	e base	d on presenta	tion.					
[Textbooks]												
Not used												
[References, etc.]	]											
(Reference boo	oks)											
					C	ontinue to グローバル・リ	ーダーシップセミナー I (企業調査研究) (2)					

グローバル・リーダーシップセミナー I (企業調査研究) (2)

#### (Related URLs)

http://www.glc.t.kyoto-u.ac.jp/ugrad

#### [Study outside of class (preparation and review)]

Investigating companies in advance. Analyzing the result from hands-on training. Preparing presentation.

#### (Other information (office hours, etc.))

How to register will be announced later. Students who want to join this course is requested to attend the first class. Students are prohibited to skip hands-on training. Evaluation will be based on presentation.

\*Please visit KULASIS to find out about office hours.

#### [Courses delivered by instructors with practical work experience]

(1) Category

An omnibus course delivered by invited lecturers and guest speakers from different companies, etc.

(2) Details of instructors ' practical work experience related to the course

										未更新			
Course nu	mber	U-EN	G20 32	2502 SE77									
Course title (and course title in English)	工学部 Faculty o	国際イン of Engineeri	ターン ng Inte	ノシップ 2 rnational Inte	ernship 2	Inst nan and of a	ructor's ne, job tit departm ffiliation	ile, nent	Graduate School of Engineering Senior Lecturer,KOWHAKUL, Was Graduate School of Engineering Professor,HONDA MITSURU				
Target year	3rd	year students of	or above	Number	of cred	its	2	Year	/semesters	2023/Intensive, year-round			
Days and period	d <b>s</b> Inte	ensive	Class	s style	Semina	ar			Language of instruction	Japanese and English			
[Overview	and p	urpose o	of the	course]									
Acqusition of international	f intern interns	ational ski ship progra	ills with ms he	th wth the t ld by the Fa	raining aculty of	of fo f En	oreign la gineerir	inguag ng or it	e through the s subsidiary l	participation to the podies.			
[Course ob	ojectiv	ves]											
The acquisition programs is e	on of in expecte	nternationa d. Detailed	al and d objec	foreign lan ctives of the	guage sl e partici	cills patio	through on shou	the p ld be i	articipation to dentified by e	) international each program.			
[Course sc	hedul	le and co	ntent	s]									
Overseas Inte	ernship	,1time,The	e conte	ents to be a	cquired	shou	uld be d	escribe	ed in the broc	hure of each internship			
program.	•				•					-			
Final Present	ation,1	time,A pre	esentat	tion by the	student	is re	quired f	ollow	ed by discussi	on among participants.			
[Course re	quirer	ments]											
Described in language skil	the app ls for t	plication be he particip	ooklet ation.	for each in	ternship	pro	ogram. T	The reg	gistrant is requ	lested to have enough			
[Evaluation	n meth	nods and	polic	cy]									
Marit rating i	s done	based on t	the pre	esentation of	or report	s aft	er each	intern	ship program	. Each Department			
responsible to	o identi	ify if the cr	redit e	arned by th	is subje	ct to	be incl	uded a	s mandatory	ones or not. If the			
credit is not in	nclude	d in the un	dergra	iduate scho	ol in wh	ich	the part	icipan	t belongs to, t	he credit is granted by			
the Global Le	enendi	ng on the c	ion Ce	nter as a op	otional c	real	t. The h	umber	OI Credits, el	ther 1 or 2, will be			
	epenar	ing on the t	Jonten		uranon	or u	lic progr		at the particip	ant has participated in.			
[Textbooks	5]												
<b></b> -						_	. – –	c	continue to 工学部	国際インターンシップ2( <b>2</b> )			

工学部国際インターンシップ2**(2)** 

### [References, etc.]

(Reference books)

#### [Study outside of class (preparation and review)]

#### (Other information (office hours, etc.))

It is required for students to check if the internship program to participate in could be evaluated as part of mandatory credits or not and could earn how many credits before the participation to the undergraduate school or educational program the student in enrolled. If the credit could not be treated as mandatory ones, get in touch with the Global Leadership Engineering Education Center.

\*Please visit KULASIS to find out about office hours.

#### [Courses delivered by instructors with practical work experience]

(1) Category

A course that includes off-campus training classes.

(2) Details of instructors ' practical work experience related to the course

Course n	umbor	U.F.N	G20 22503 S17	7									
Course nu	Inder	U-EIN	020 22JUS SJ/	1									
Course title (and course title in English)	グローバル Global Lea	・リーダーシップ adership Seminar I	セミナー II (イノベーショ) I (Innovation and its con	ソとその事業化) umercialization)	Inst nan anc of a	tructor's ne, job ti I departn affiliation	tle, nent	Graduate Scl Professor,HC Graduate Scl Senior Lectu	Graduate School of Engineering Professor,HONDA MITSURU Graduate School of Engineering Senior Lecturer,hirai yoshikazu				
Target yea	<b>r</b> 2no	d year students o	or above <b>Numbe</b>	r of cred	lits	1	Year	/semesters	2023/Intensive, Second semester				
Days and perio	ods Int	ensive	Class style	Semina	ar			Language of instruction	Japanese				
[Overview	and p	ourpose o	f the course]										
This course is a small-group workshop program where students are supposed to extract or set up challenges by themselves aiming at creating new social values. In concrete, abilities of planning and problem-solving are trained through group works in residential training and skills of presentation and communication are enhanced through oral presentations regarding contents of the proposal at each step of the process from a preliminary draft to its completion.													
[Course o	[Course objectives]												
Ability of planning, from extraction or setting up challenges to proposal of solutions aiming at creating new social values, is trained through group works.													
[Course s	chedu	ile and co	ntents]										
Dependin training will	g on th be can	e situation acceled.	of COVID-19 I	bandemic,	all	lectures	will b	e given onlin	e and residential				
Orientation, organized. Lectures,2tin Group work	1time,A mes,Le s,3time	A brief over ectures by executives by executives by executive and the second se	view and a sch xperts are giver p challenges, ez	edule of t n. straction o	he c of pr	ourse ar oblems,	e expla collec	ained and wo	rking groups are tion, and group works				
Residential t problems is Preliminary Report meet	training planne review ing,1ti	g,7times,Th d, a draft re 7 meeting,1t me,Final pr	rough intensive port is made, a ime,A prelimir esentations are	e group we nd a few p ary reviev made and	orks prese w m l rep	based of entations eeting is orts are	on disc s are n s held a submi	ussion, a prop nade. and discussio tted.	posal for solving ns are made.				
[Course re	equire	ements]											
None													
[Evaluatio	n met	hods and	policy]										
Dependin training will	g on th be can	e situation aceled.	of COVID-19 I	oandemic,	all	lectures	will b	e given onlin	e and residential				
It is required concerning a	l to join abilitie:	n the reside s in group d	ntial training. A liscussion to ex	a report m tract or se	eeti t up	ng is he challen	ld and ges an	comprehensi d to propose	ve evaluation solutions for achieving				

1

\_\_\_\_\_Continue to グローバル・リーダーシップセミナー II (イノベーションとその事業化) (2)

グローバル・リーダーシップセミナー II (イノベーションとその事業化) (2)

a goal is made through presentation of the proposal as well as a submitted report.

### [Textbooks]

Will be indicated as necessary.

#### [References, etc.]

#### (Reference books)

Will be indicated as necessary.

# [Study outside of class (preparation and review)]

Will be indicated as necessary.

### (Other information (office hours, etc.))

Course open period: October to January

\*It depends on divisions which students belong to whether the earned credits are admitted as credits required for graduation. Please refer to the syllabus of your division.

\*Please visit KULASIS to find out about office hours.

# [Courses delivered by instructors with practical work experience]

(1) Category

(2) Details of instructors ' practical work experience related to the course

Course nu	umbe	er	U-	ENC	325 25	5003 LJ54	U-E	NG25	5 25003	LJ71	U-ENG25 25003 LJ75				
Course title (and course title in English)	計算 Matl	ī機数 hem	数学 atics	( 原〕 for C	) Compt	utation		Ins nar and of a	tructor's ne, job ti I departn affiliation	tle, nent	Graduate School of Engineering Associate Professor, TAISHI KOBAYASHI				
Target yea	r	2nd y	ear stuc	lents of	r above	Number	of cre	dits	2	Year	/semesters	2023/First semester			
Days and perio	ods F	ri.2			Class	s style	Lectu	ıre			Language of instruction	Japanese			
[Overview	and	d pu	irpos	se of	the	course]									
This course deals with computer-based numerical calculation methods. The goal is to learn a programming anguage in order to develop the ability to use a series of processing methods (such as planning processing method), create programs, and analyze results.															
[Course objectives]															
Course objectives] Course objective: By the end of the course, students will be able to use a series of processing methods such as planning processing method, create programs, and analyze results.															
[Course s	che	dule	e and	l cor	ntent	s]									
<ul> <li>(1) Orientati Login methol</li> <li>(2) Learn the Understandi calculation.</li> <li>(3) Basic pro Acquisition</li> <li>subprogram</li> <li>(4) Applicati</li> <li>Roots of the linear equati</li> <li>method) Acco</li> <li>(5) Construct</li> <li>Acquire abo</li> <li>(6) Confirmation</li> </ul>	[Course schedule and contents] 1) Orientation and terminal operation, 2 classes Login method of the terminal of the satellite exercise room, how to operate the editor, etc. (2) Learn the mechanism of numerical calculation, 2 classes Understanding the principle of numerical calculation, representation of numbers, errors accompanying calculation. (3) Basic programming, 3 classes Acquisition of essential items for programming such as input / output, branch, repeat, variable, array, subprogram and function three times. Task: sum-difference product quotient, sum of sequence, prime number (4) Applicative programming, 4 classes Roots of the equation (dichotomy, Newton's method), numerical integration (Simpson method), simultaneous inear equation (Gauss elimination method), eigenvalue (Jacobi method), differential equation (Runge-Kutta nethod) Acquire the basic idea of calculation method and do actual programming. (5) Constructive programming, 3 classes Acquire about several development problems and solutions, and work on issues. (6) Confirmation of learning attainment, 1 class Post explanation discussion and review of examination questions to KULASIS.														
[Course re	equi	rem	ents	5]											
Recommend	l taki	ng b	basic i	infor	matio	n processi	ng and	basic	informa	ation p	processing exe	ercises.			
[Evaluatio	n m	ethe	ods	and	polic	;y]									
[Grading me Grade is bas [Grading cri Must score 6 60 or above:	ethod ed or terio 50 or pass	n rep n] abo	ports ve ou	(30% it of :	) and 100 o	one writt	en exar rts and	ninati writte	on (70% en exam	). inatior					
										(	Continue to 計	·算機数学(原) <b>(2)</b>			

# 計算機数学(原)**(2)**

59 or below: fail

#### [Textbooks]

Not used

#### [References, etc.]

#### (Reference books)

戸川隼人『演習と応用 FORTRAN77』(サイエンス社) ISBN:4781905110, 堀之内他 『ANSI C によ る数値計算法入門 (第2版)』(森北出版) ISBN:4627093829

### [Study outside of class (preparation and review)]

As needed, practice exercises will be conducted in class. Therefore, please go over what you learned after each class.

# (Other information (office hours, etc.))

Lecture is given in Japanese.

Course nu	umbe	er	U-	ENC	G25 2:	5003 LJ54	1	U-EN	G25	5 25003	LJ71	U-ENG25 25003 LJ75				
Course title (and course title in English)	計算 Mat	〕機数 hema	效学( atics:	(エ for C	ネ) Compu	utation			Inst nan and of a	tructor's ne, job t I departi affiliatior	itle, nent	Graduate School of Energy Science Associate Professor,HACHIYA KAN Graduate School of Energy Science Professor,Jun HAYASHI				
Target yea	r	2nd ye	ear stud	lents o	r above	Number	of	cred	lits	2	Yea	r/semesters	2023/First semester			
Days and perio	r sbc	ue.1			Class	s style	Ι	Lectur	e			Language of instruction	Japanese			
[Overview	and	d pu	irpos	se of	f the	course]										
To acquire the ability of basic computational programing and learn the basic mathematics underlying the computational programing.																
[Course objectives]																
To acquire the ability of basic computational programing and learn the basic mathematics underlying the computational programing.																
[Course schedule and contents]																
room; Lecture on the procedure to build up the computational environment Basics of the numerical computational language, 2times, Lecture on the basics of the numerical computation, 3times, Input/Output; Subroutine; etc.// Exercise of the arithmetic operations, Sequences, etc. Basic programing, 4times, Lecture on the basics of approximations of roots of the real-valued function (Newton's method), numerical integration (Simpson Method); Simultaneous equation (Gaussian elimination), etc. Advanced programing, 3times, Lecture on the procedure to built a structure of the complicated issues// Exercise of advanced programming. Summary and confirmation,1time,													umerical computation, es, etc. -valued function (Gaussian elimination), pplicated issues//			
[Course re	equi	rem	ents	5]												
None																
[Evaluatio	n m	etho	ods a	and	polic	¢y]										
Comprehens	sive e	evalu	ation	n of a	ittend	ance, exer	cis	es and	l exa	aminatio	on.					
[Textbook	s]															
Not used												Continuo to ±1				
											(	Continue to 計	算機数学(エネ)(2) 🛛 🛔			

# 計算機数学(エネ)**(2)**

#### [References, etc.]

(Reference books)

Introduced during class

#### [Study outside of class (preparation and review)]

Learn the basics of FORTRAN and C. Try to understand the exercises in each lecture.

# (Other information (office hours, etc.))

Check KULASIS/Office Hours

\*Please visit KULASIS to find out about office hours.

### [Courses delivered by instructors with practical work experience]

(1) Category A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

Course nu	ımber		U-EN	NG25 2	5003 L	J54	U-EN	G25	5 25003	LJ71	U-E	ENG25 2	2500	03 LJ75		
Course title (and course title in English)	計算 Mathe	幾数 ema	女学(材 ntics for	畿 : 7 • ∙ Comp	9・11組) putation				tructor's ne, job ti I departn Iffiliation	tle, nent	Grac Seni	Graduate School of Engineering Senior Lecturer,hirai yoshikazu				
Target yea	<b>r</b> 2n	nd yea	ar student	s or above	Numl	ber (	of cred	lits	2	Year	r/sen	nesters	20	023/First	semester	
Days and perio	ods Th	u.2		Class	s style	<b>)</b>	Lectur	e			Langu	age of instructior	Jaj	panese		
[Overview	and	pur	rpose	of the	cours	e]										
This course focuses on the mathematical and numerical methods for numerical computation. We will learn the mathematical methods to solve mathematical and physical problems by using computers. We will study the programing language and practice programming to learn and experience the process of how to use a program to solve problems, write programs, and analyze the results, and also understand the accuracy and characteristics of the numerical methods.																
[Course o	[Course objectives]															
[Course objectives] Understand and learn the basic knowledge, method and skill of mathematical solution for computation, planning the numerical method, programming, and analyze the results.																
[Course s	chedu	ule	and c	ontent	s]											
Mathematics Learn the pr computation	s for no inciple	ume e of	erical si compu	imulation a	on (3) and the	mat	hematic	al m	ethod, a	and un	derst	and the	erro	or appeari	ing in the	
Orientation a Access to the program.	and op e comj	erat pute	ting the er in the	e termin e satelli	al (1) te semi	inar	room ar	nd ho	ow to us	se the e	editor	r, and co	ompi	ile and ru	ın a	
Basic progra Learn the ba function, etc	ummin sic sta .)	g (2 item	2) nents ar	nd struc	ture of	prog	grammii	ng (i	nput, oi	utput, l	loop,	paramet	ters,	, array, sı	ıb routine,	
Applied and We will lear (Bisection m (Gaussian el	practi n the f nethod, iminat	cal fund , Ne tion	problen damenta ewton's a), diffe	ms (5) al meth methor rential	od and d), num equatio	prog neric on (R	grammin al integ lunge-K	ng o ratic utta	f variou on (Simj method	s num pson ' l), data	erical s me anal	l method thod), si ysis (lea	ls: s imul ist-s	solution o ltaneous square me	of equation equation ethod).	L
Advanced p Learn the ma	rogram athema	nmin atica	ng (3) al meth	od and	progra	mmi	ing for a	adva	nced pr	oblem	s incl	uding p	hysi	ical phen	omena.	
Confirmatio	n of le	arni	ing atta	inment	. (1)											
[Course re	quire	eme	ents]													
Students are Processing F	[Course requirements] Students are recommended to have completed Information Processing Basics and Exercises in Information Processing Basics.															

Continue to 計算機数学(機:7・9・11組)(2)

計算機数学(機:7・9・11組)(2)

#### - -

## [Evaluation methods and policy]

A final examination will be held. In-class reports will be factored in for maximum 40%.

#### [Textbooks]

Not used

# [References, etc.]

(Reference books)

# [Study outside of class (preparation and review)]

Study and practice the basics of programming (grammar, flowchart, compile, edit, etc).

## (Other information (office hours, etc.))

The order of classes listed above and their timing may differ depending on the year.
								未更新	
Course number	U-ENG2	5 25003 LJ54	U-EN	G25	25003	LJ71	U-ENG25 2	5003 LJ75	
Course title (and course title in English)	数学(機: atics for Co	3・10・12組) nputation	)	Inst nam and of a	ructor's ne, job tit departm ffiliation	tle, nent	Graduate School of Engineering Professor, MATSUBARA ATSUSHI Graduate School of Engineering Associate Professor, KOUNO DAISUKE Graduate School of Informatics Associate Professor, SAKURAMA KAZUNORI		
Target year 2nd y	ear students or ab	oove Number o	of cred	its	2	Year	/semesters	2023/First semester	
Days and periods Mon.	2 <b>Cl</b> a	ass style	Lecture	e			Language of instruction	Japanese	
[Overview and pu	irpose of t	he course]							
[Course objective	es]								
[Course schedule	e and conte	ents]							
,2times,									
,2times,									
,3times,									
,4times,									
,3times,									
, i time,									
[Course requirem	nents]								
None									
[Evaluation meth	ods and po	olicy]							
[Textbooks]									
[References, etc.]	]								
(Reference boc	oks)								
						(	Continue to 計算機数	<u>数学(機:8・10・12組)(2)</u> 	

計算機数学(機:8・10・12組)(2)

# [Study outside of class (preparation and review)]

(Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

### [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

+	<b>—</b>	÷٣
木	史	新

Course nu	umbe	er	U-ENG	G25 2:	5004 LJ71	U-EN	G25	25004	LJ75	U-ENG25 25	5004 LJ77
Course title (and course title in English)	e se 材料力学1(機宇:学番奇数) Mechanics of Materials 1 Instructor's name, job title, and department of affiliation Graduate School of Engineering Professor,SHIMADA TAKAHIRO										
Target yea	r i	2nd ye	ar students c	r above	Number	of cred	its	2	Year	/semesters	2023/First semester
Days and perio	ods W	Ved.1		Class	s style	Lecture	e			Language of instruction	Japanese
[Overview	and	d pui	rpose o	f the	course]						
	hioc	tivo	e]								
	DJec		<b>5</b> ]								
[Course se	cheo	dule	and co	ntent	s]						
,1time,											
,Itime, 2times											
,2umes, 1time											
4times											
.1time.											
.4times.											
,1time,											
[Course re	equi	reme	ents]								
None	-		_								
[Evaluatio	n m	etho	ds and	polic	;y]						
[Textbook	sl										
-											
[Reference	es. e	etc.1									
( Referen	nce l	bool	<b>(S</b> )								
(			,								
[Study out	tside	e of	class (p	repa	ration and	d revie	w)]				
				-							
( Other int	form	natio	n (offic	e hou	ırs, etc.) )	)					
*Please visit	t KUI	LAS	IS to find	out a	bout office	hours.					

									未更新
Course nu	umbe	er U-El	NG25 25004 LJ71	U-EN	G25	25004	LJ75	U-ENG25 2	5004 LJ77
Course title (and course title in English)	材料 Mec	↓力学1(札 hanics of M	幾宇:学番偶数) faterials 1		Inst nan and of a	ructor's ne, job tif I departm Iffiliation	tle, nent	Graduate Scl Professor,HI	nool of Engineering RAKATA HIROYUKI
Target yea	r :	2nd year studen	ts or above <b>Number</b> of	of cred	its	2	Year	/semesters	2023/First semester
Days and perio	ods W	Ved.1	Class style	Lecture	e			Language of instruction	Japanese
[Overview	anc	l purpose	of the course]						
[Course o	bjec	tives]							
[Course s	cheo	dule and c	contents]						
0									
[Course re	equi	rements]							
None									
[Evaluatio	n m	ethods an	d policy]						
[Textbook	s]								
[Referenc	es, e	etc.]							
(Referer	nce l	books)							
[Study out	tside	e of class	(preparation and	d reviev	w)]				
( Other in	form	ation (off	ice hours, etc.) )	)					
*Please visit	KU	LASIS to fi	nd out about office	hours.					

Course number         U-ENG25 25004 LJ71         U-ENG25 25004 LJ75         U-ENG25 25004 LJ77									5004 LJ77			
Course title (and course title in English)	ourse title ind course tle in nglish) 材料力学 1 (材工ネ原:学番奇数) Mechanics of Materials 1 Instructor's name, job title, and department of affiliation Graduate School of Energy Science Professor,IMATANI SHIYOUJI											
Target yea	<b>r</b> 2	2nd ye	ar students	or above	Number of	of cred	its	2	Year	r/semesters	2023/First semester	
Days and perio	ods W	ed.1	l	Class	s style	Lecture	e			Language of instruction	Japanese	
[Overview	and	pu	rpose o	of the	course]							
[Course o	bject	tive	s]									
[Course s	ched	lule	and co	ontent	s]							
Subjects on Strain Energ Bending of I Complex be ,1time,	Subjects of Mechanics of Materials, 2000 Subjects on Simple Stress States, 3times, Strain Energy, 2times, Bending of Beams, 5times, Complex beams, 2times, 1time,											
[Course re	equir	eme	ents]									
Fundamenta	ls of l	Matl	hematic	s and P	hysics							
[Evaluatio	n me	ethc	ods and	l polic	¢y]							
[Textbook	s]											
ISBN:4-563 (Zairyo Rik	-0346 igaku	55-7 1 no	Kiso, Sł	nibata,	Ohtani, Ko	mai, Inc	oue,	Baifuka	an) isb	n{}{4563034	657}	
[Reference	es, e	tc.]										
(Referer	nce b	bool	ks)									
[Study out	tside	of	class (	prepa	ration and	d reviev	w)]					
(Other in	form	atio	on (offic	ce hou	urs, etc.) )	1						
*Please visit	t KUL	LAS	IS to fin	d out a	bout office	hours.						

											:	未更新
Course nu	umbe	er 📄	U-ENC	G25 2:	5004 LJ71	U-EN	G25	25004	LJ75	U-ENG25 2	5004 LJ77	
Course title (and course title in English)	材料 Mec	力学 1 hanics	l (材: of Mat	エネ原 erials	頁:学番偶 1	<b>]数)</b>	Inst nan and of a	ructor's ne, job til I departm Iffiliation	ile, nent	Graduate Sch Associate Pro	nool of Energ fessor,ABE M	y Science ASATAKA
Target yea	r 2	2nd year s	students of	r above	Number	of cred	lits	2	Year	/semesters	2023/First se	emester
Days and perio	ods W	Ved.1		Class	s style	Lectur	e			Language of instruction	Japanese	
[Overview	and	l purp	ose of	f the	course]							
[Course o	bjec	tives]										
[Course s	chec	dule a	nd cor	ntent	s]							
,3times, ,2times, ,5times, ,2times, ,1time,												
[Course re	equi	remen	its]									
None												
[Evaluatio	on m	ethod	s and	polic	;y]							
[Textbook	(s]											
[Referenc	es, e	etc.]										
(Referer	nce I	books	)									
[Study ou	tside	e of cla	ass (p	repa	ration and	d revie	w)]					
( Other int	form	ation	(office	e hoi	urs, etc.) )	)						
*Please visit	t KUI	LASIS	to find	out a	bout office	hours.						

Course nu	umbe	r	U-EN	G25 2	5005 LJ7	71 U-EI	NG2:	5 25005	LJ75	U-ENG25 2	5005 LJ77
Course title (and course title in English)	ourse title ind course tle in nglish) dtle in nglish) dtle in nglish)										
Target yea	r 2	2nd ye	ear students	or above	Numbe	er of cre	dits	2	Yea	r/semesters	2023/Second semester
Days and perio	ods Fi	ri.2		Class	s style	Lectu	ire			Language of instruction	Japanese
[Overview	and	l pu	rpose o	of the	course	]					
The simplifi complex two various strue	ed or o- or ctural	ne-di three mei	mensior e-dimens mbers ar	al trea sional j e lectu	tments le problems red inclu	ectured ir Analyti ding the	n Mec cal m coml	chanics of nethods to nethod str	of Mat for the ress sta	erials 1 are ex deformation ates.	and the stresses in
[Course o	bjec	tive	s]								
The emphas structures or	is is t • strui	to un	iderstand al memb	l the fu ers, by	indamen advanci	tal conce	pts ar asic p	nd metho rinciples	ods foi s givei	the stress/str n in Mechanic	ain analysis of various es of Materials 1.
[Course s	chec	dule	and co	ontent	:s]						
(Beam bend 3-5. Advanc (Statically in 6-9. Basics of (Combined s Stress-strain 10-11. Torsi (Torsion of 12. Buckling of 13-14. Axia (Circular cy 15. Feedbac Academic ac	ing, ( ed pr of ela stress on rela on circul g f colu lly sy linder k chiev	Casti roble rmin stici stat tion: lar b umn, rs, S eme	igliano's ems of be ate bean ty es, Moh s, Plane ars, Coil Instabil etric pro pherical nt assess	theore eams ns, Con r's stress stress of spring ity, Eff blems shells, sment:	m) ntinuous ss and str or strain gs, Comb fect of su and bend , Rotating Regular	beams, C rain circle states, Re bination o upport cou- ling of pl g circular examinat	Curve es, Ed elatio of ben nditic ates plate tion	d beams quilibriu n betwee ding and ons, Buc es, Cylin	) m equ en elas d torsi kling ( udrical	ations, Displa stic constants) on) design) bending, Ben	acement-strain relations,
* The order	and t	he h	ours (we	eights)	for each	item are	possi	bly subj	ect to	change.	
Mechanics	f Mo	toric		lother	subjects	such as	alou	lue line	ar olas	bra machani	as of particles and visid
bodies.	n wia	lleria	ais 1, and	i other	subjects	such as (	calcu	ius, iinea	ar aige	ora, mechanic	es of particles and fight
[Evaluatio	n m	etho	ods and	l polic	cy]						
[Evaluation Evaluation	meth is bas	od] sed c	on the m	id-term	and the	final exa	imina	tions as	a gene	eral rule,	
									(	Continue to 材料力	学2(機:7,8,9,10組)(2)

# 材料力学2(機:**7,8,9,10**組)(2)

possibly with considerations of short reports (about three times).

(In the cases where the evaluation for short reports are considered, the ratio of the evaluations for regular examination and short reports is about 9:1.)

[Evaluation standard]

Evaluation is based on class registration guideline.

### [Textbooks]

T. Shibata et al. <sup>P</sup>Fundamentals of Strength of Materials (Zairyo-Rikigaku no Kiso) (Baifu-kan) ISBN: 4563034657

[References, etc.]

(Reference books)

To be referred to during the course

### [Study outside of class (preparation and review)]

It is highly recommended to make the preparation and review with the specified textbook. Homework (short reports: about three times) will be assigned.

#### (Other information (office hours, etc.))

Course title (and course Brglish)         材料力学2(機:11,12組,字): Mechanics of Materials 2         Instructor's name, job title, and department, of affiliation.         Graduate School of Engineering Professor,BIWA SHIRO           Target year         Ind year students or above Mumber of credits 2         2         Year/semesters         2023/Second semester           Days and periods         Fri.2         Class style         Lecture         Lagget/stard         Japanese           [Overview and purpose of the course]         Execure         Lagget/stard         Japanese           [Overview and purpose of the course]         Execure         Lagget/stard         Japanese           [Overview and purpose of the course]         Execure         Lagget/stard         Japanese           [Overview and purpose of the course]         Execure beget/stard         Japanese           [Pourse bjectives]         The aim of this subject is to understand the analytical methods for structural members subjected to various types of loading, and the treatments of two- or three-dimensional stresses and strains, based on the basic ideas learnt in the Mechanics of Materials 1 course.           [Pourse bjectives]         The following topics are discussed in the lecture, but subject to possible changes according to each year's situations.           Week 1: Bending of beams (basic equations, Castigliano's theorem, solution methods)         Week 3: Fundamentals of elasticity (1) (definition of stress, equilibrium equations)           Wee	Course n	umber	U-ENG25	25005 LJ71	U-EN	G25	5 25005	LJ75	U-ENG25 2	5005 LJ77			
Target year       Image students or low       Number Credits       2       Year/sensetrs       2023/Second semester         Days and period       Fri.2       Image students       Image students <t< th=""><th colspan="12">Course title (and course title in English)材料力学2(機:11,12組、宇) Mechanics of Materials 2Instructor's name, job title, and department of affiliationGraduate School of Engineering Professor, BIWA SHIRO</th></t<>	Course title (and course title in English)材料力学2(機:11,12組、宇) Mechanics of Materials 2Instructor's name, job title, and department of affiliationGraduate School of Engineering Professor, BIWA SHIRO												
Days and periods       Fri.2       Class style       Lecture       Language diffusion       Japanese         Index of the course of the course of the course of the course of statically indeterminate beams, bending of curved beams, torsion of bars, buckling of columns, cylindrical vessels subjected to internal/external pressures, etc. More general treatments of stresses and strains and their relations in two- or three-dimensional cases are also explained.       Image: Columns, cylindrical strains and their relations in two- or three-dimensional cases are also explained.         Descention       Image: Columns, cylindrical strains and their relations in two- or three-dimensional stresses and strains and their relations in two- or three-dimensional stresses.       Image: Columns, cylindrical strains and their relations of the course course of the	Target yea	<b>r</b> 2nd y	year students or abo	ove Number o	of cred	lits	2	Year	r/semesters	2023/Second semester			
<ul> <li><b>[Overview and purpose of the course]</b></li> <li>The basic treatments given in the Mechanics of Materials 1 course are extended to problems such as bending of statically indeterminate beams, bending of curved beams, torsion of bars, buckling of columns, cylindrical vessels subjected to internal/external pressures, etc. More general treatments of stresses and strains and their relations in two- or three-dimensional cases are also explained.</li> <li><b>[Course objectives]</b></li> <li>The aim of this subject is to understand the analytical methods for structural members subjected to various types of loading, and the treatments of two- or three-dimensional stresses and strains, based on the basic ideas learnt in the Mechanics of Materials 1 course.</li> <li><b>[Course schedule and contents]</b></li> <li>The following topics are discussed in the lecture, but subject to possible changes according to each year's situations.</li> <li>Week 1: Bending of beams (basic equations, Castigliano's theorem, solution methods)</li> <li>Week 2: Complex problems of beams (statically indeterminate beams, curved beams)</li> <li>Week 3: Fundamentals of elasticity (1) (definition of stress, equilibrium equations)</li> <li>Week 4: Fundamentals of elasticity (3) (principal stresses, correspondence to eigenvalue problems)</li> <li>Week 6: Fundamentals of elasticity (5) (strains in an arbitrarily inclined plane, Mohr's circle of stress)</li> <li>Week 6: Fundamentals of elasticity (6) (generalized Hooke's law, plane stress/plane strain, relation among elastic constants)</li> <li>Week 1: Torsion of bars (1) (torsion of bars of circular cross-section)</li> <li>Week 1: Buckling of columns (buckling loads, column under eccentric loading, buckling design)</li> <li>Week 14: Bending of plates; Solution of exercise problems (back column under eccentric loading, buckling design)</li> <li>Week 15: Final examination</li> <li>Week 16: Feedback</li> </ul>	Days and perio	ods Fri.2	Cla	Language of instruction	Japanese								
The basic treatments given in the Mechanics of Materials 1 course are extended to problems such as bending of statically indeterminate beams, bending of curved beams, torsion of bars, buckling of columns, cylindrical vessels subjected to internal/external pressures, etc. More general treatments of stresses and strains and their relations in two- or three-dimensional cases are also explained. <b>[Course objectives]</b> The aim of this subject is to understand the analytical methods for structural members subjected to various types of loading, and the treatments of two- or three-dimensional stresses and strains, based on the basic ideas learnt in the Mechanics of Materials 1 course. <b>[Course schedule and contents]</b> The following topics are discussed in the lecture, but subject to possible changes according to each year's situations.  Week 1: Bending of beams (basic equations, Castigliano's theorem, solution methods) Week 2: Complex problems of beams (statically indeterminate beams, curved beams) Week 3: Fundamentals of elasticity (1) (definition of stress, equilibrium equations) Week 5: Fundamentals of elasticity (2) (stresses on an arbitrarily inclined plane, Mohr's circle of stress) Week 7: Fundamentals of elasticity (5) (strains in an arbitrary direction, Mohr's circle of strain) Week 8: Fundamentals of elasticity (6) (generalized Hooke's law, plane stress/plane strain, relation among elastic constants) Week 1: Torsion of bars (1) (torsion of bars of circular cross-section) Week 11: Torsion of bars (2) (coil springs, combined bending and torsion) Week 12: Buckling of columns (buckling loads, column under eccentric loading, buckling design) Week 14: Bending of plates; Solution of exercise problems/mid-term examination Week 15: Final examination Week 16: Feedback	[Overview	and p	u <mark>rpose of t</mark> h	e course]									
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# [Course requirements]

Understanding of the Mechanics of Materials 1 course and other basic subjects such as calculus, linear algebra, and mechanics of particles and rigid bodies is prerequisite.

# [Evaluation methods and policy]

Grading is made based on the report assignments (30%) and the final examination (70%), but their weights are subject to change if the mid-term examination is included. Occasional changes will be announced in the class. The total score is evaluated between 0 and 100 points (the pass mark is 60).

### [Textbooks]

T. Shibata, R. Ohtani, K. Komai and T. Inoue <sup>F</sup>Fundamentals of Strength of Materials (Zairyo-Rikigaku no Kiso) <sup>J</sup> (Baifu-kan) ISBN:ISBN4-563-03465-7

### [References, etc.]

# (Reference books)

Introduced during class

# [Study outside of class (preparation and review)]

Contents of the Mechanics of Materials 1 course should be fully reviewed. Reports will be assigned, which need to be solved as homeworks. In addition, it is desirable that an enrolled student works on the textbook by him/herself prior to or after each lecture.

# (Other information (office hours, etc.))

Lectures are given in a black-board style. Students are expected to take the notes to understand the ideas as well as mathematical derivations, and make questions regarding unclear points.

Course nu	umbe	er	U-ENG	G25 2:	5005 LJ71	U-EN	G25	5 25005	LJ75	U-ENG25 2:	5005 LJ77	
Course title (and course title in English)	材料 Mec	↓力ミ hani	学2(材. ics of Mat	エネ原 terials	泵) 2	Instructor's name, job title, and department of affiliation			le, ient	Graduate School of Energy Science Associate Professor, KINOSHITA KATSUYUKI		
Target yea	r	2nd ye	ear students c	or above	Number	of cred	its	2	Year	/semesters	2023/Second semester	
Days and perio	ods F	ri.2		Class	s style	Lecture	e			Language of instruction	Japanese	
[Overview	and	d pu	rpose o	f the	course]							
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[Course s	cheo	dule	and co	ntent	s]							
,3times,												
,2times, 4times												
,4times,												
,1time,												
,1time,												
[Course re	equi	rem	ents]									
None												
[Evaluatio	n m	ethe	ods and	polic	;y]							
[Textbook	s]											
[Reference	es, e	etc.]	I									
(Referer	nce	boo	ks)									
[Study ou	tside	e of	class (p	orepa	ration and	d revie	w)]					
(Other in	form	natio	on (offic	e hou	irs, etc.)	)						
*Please visit	KU	LAS	IS to find	l out a	bout office	e hours.						

Course nu	umber	U-ENO	G25 2:	5007 LJ57	U-EN	G25	5 25007 ]	LJ71	U-ENG25 2	5007 LJ77	
Course title (and course title in English)	熱力学 Thermo	2 (機宇 dynamics	:学習 2	昏奇数)		Inst nan and of a	tructor's ne, job tit I departm offiliation	le, ient	Graduate School of Engineering Associate Professor, TATSUMI KAZUYA		
Target yea	r 2nd	year students o	or above	Number	of cred	its	2	Year	/semesters	2023/Second semester	
Days and perio	ods Tue.	1	Class	s style	Lecture	e			Language of instruction	Japanese	
[Overview	and p	urpose o	f the	course]							
[Course o	bjectiv	es]									
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,2times,											
,2times,											
,6times,											
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, Itime,											
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[Course re	equirer	nents]									
None											
[Evaluatio	on meth	ods and	polic	;y]							
[Textbook	s]										
[Referenc	es, etc.	.]									
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[Study ou	tside o	f class (p	orepa	ration and	d revie	w)]					
( Other in	formati	on (offic	e hoı	ırs, etc.) )	1						
*Please visit	t KULA	SIS to find	l out a	bout office	hours.						

											未更新
Course nu	ımbe	<b>r</b>	U-ENG	G25 2	5007 LJ57	U-EN	G25	25007	LJ71	U-ENG25 2	5007 LJ77
Course title (and course title in English)								ructor's ne, job tit I departm Iffiliation	tle, nent	Graduate Sch Professor,IW Graduate Sch Associate Profes	ool of Engineering AI HIROSHI ool of Engineering sor,KISHIMOTO MASASHI
Target yea	r :	2nd yea	ar students c	or above	Number	of cred	its	2	Year	/semesters	2023/Second semester
Days and perio	ods T	ue.1		Clas	s style	Lecture	e			Language of instruction	Japanese
[Overview	and	l pur	rpose o	f the	course]						
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None											
[Evaluatio	n m	etho	ds and	polic	cy]						
[Textbook	ːs]										
[Reference	es, e	etc.]									
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[Study out	tside	e of (	class (p	orepa	ration and	d revie	w)]				
( Other in	form	atio	n (offic	e hou	urs, etc.) )	)					
*Please visit	t KUI	LASI	IS to find	l out a	about office	e hours.					

Course nu	umber	U-ENO	G25 25	5007 LJ57	U-EN	G25	25007	LJ71	U-ENG25 2:	5007 LJ77	
Course title (and course title in English)	熱力学 Thermo	2(エネ odynamics	原) 2			Instructor's name, job title, and department of affiliation			Graduate School of Energy Science Professor,KAWANABE HIROSHI		
Target yea	<b>r</b> 2nd	year students of	or above	Number	of cred	its	2	Year	/semesters	2023/Second semester	
Days and perio	ods Mor	n.3	Class	s style	Lecture	e			Language of instruction	Japanese	
[Overview	and p	urpose o	f the	course]							
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None											
[Evaluatio	on metl	nods and	polic	;y]							
[Textbook	(s]										
[Referenc	es, etc	.]									
( Referei	nce bo	oks)									
[Study ou	tside c	f class (r	orepa	ration and	d revie	w)]					
(Other in	format	ion (offic	e hou	irs, etc.)							
*Please visit	t KULA	SIS to find	l out a	bout office	hours.						

										未更新		
Course nu	ımbe	er U	J-ENG25 3	5008 LJ71	U-EN	G25	35008	LJ77				
Course title (and course title in English)	材料 Func	基礎学 lamenta	1(機宇 ls of Mater	) ials 1		Instructor's Gr name, job title, Pr and department Gr of affiliation Pr				Fraduate School of Engineering rofessor,HIRAKATA HIROYUKI Fraduate School of Engineering rofessor,SHIMADA TAKAHIRO		
Target yea	r :	3rd year stu	udents or above	Number	of cred	its	2	Year	/semesters	2023/First semester		
Days and perio	ods W	Ved.3	Clas	s style	Lecture	e			Language of instruction	Japanese		
[Overview and purpose of the course]												
Introductory	clas	s to teac	h fundame	ntals for Ma	aterial S	cien	ice.					
[Course o	bjec	tives]										
[Course s	chec	dule an	d content	ts]								
Bonding and etc.: 4 times	l stru	cture of	materials:	Crystal stru	icture, de	efec	ts in cry	vstals,	structure and	properties of polymers		
Plastic defor	mati	on and f	racture: Cr	ystal defect	and fra	ctur	e etc.: 4	times				
Phase diagra	ım: T	he phas	e rule, bina	ry system d	liagram,	teri	nary pha	ise dia	gram etc.: 2 ti	mes		
Solidificatio	n anc	d phase	transformat	tion, deposi	tion etc.	:1t	ime					
Processing:	Hot a	and cold	processing	, recrystalli	ization e	tc. ]	l time					
Steel: Steel j	proce	essing, n	naterial, hea	at treatment	t, transfo	orma	ation etc	:: 2 tir	nes			
feedback les	son:	1 time										
Confirmatio	n of l	learning	achieveme	ent: by repor	rts and a	tes	t: 1 time	e				
[Course re	qui	rement	:s]									
None												
[Evaluatio	n m	ethods	and polic	cy]								
reports and a	a test											
Continue to 材料基礎学 1(機宇)(2)												

# 材料基礎学1(機宇)**(2)**

# [Textbooks]

isbn:978-4-901381-58-1 be sold at 日本材料学会事務所 ( https://www.jsms.jp/index.html)

# [References, etc.]

 $(\ {\rm Reference\ books\ })$ 

# [Study outside of class (preparation and review)]

Read the textbooks before each class, and ascertain the knowledge after the class.

# (Other information (office hours, etc.))

Course number       U-ENG25 35008 LJ71       U-ENG25 35008 LJ71         Course title (and course title in English)       Farduate School of Engineering Professor, TAKAGI IKUJI         Farget year       Zad year students or above Number of credits       2       Year/semesters       2023/Second semester         Days and periods       Wed.1       Class style       Lecture       angug#initum       Japanese         [Course objective:       To anderstanding these properties, focusing on metal.       Japanese       2023/Second semester         [Course objective:       By the end of the course, students will have the basic knowledge they need to pursue further studies in materials science and they will be able to investigate appropriate materials in experimentation and design.       Fourse specifies that are important in selecting and using materials, as well as the basic concepts necessary for understanding these properties, focusing on metal.         [Course objective: By the end of the course, students will have the basic knowledge they need to pursue further studies in materials science and they will be able to investigate appropriate materials in experimentation and design.         [Course objective: By the end of the course]       Image in materials and their students in solid matter, density and thermal expension, and so on .         [Course objective: By the ond of the course]       Image in approxementation of materials, a classes: Explain redox and the coagulation of metricals used to support on anterials comprised of two or more chemical elements, and other information concerning the composition of materi		_											71 <b>~</b> 3/1		
Course title (and course title in Brgish)         材料基礎学1(エネ原) Fundamentals of Materials 1         Instructor's name, job title, and department         Graduate School of Engineering Professor,TAKAGI IKUJI           Farget year         ad year students or abov         Number of credits         2         Year/semesters         2023/Second semester           Days and periods         Wed.1         Class style         Lecture         apage/itention         Japanese           IOverview and purpose of the course]         In this course, we discuss properties that are important in selecting and using materials, as well as the basic concepts necessary for understanding these properties, focusing on metal.         Image/itention         Image/itention           ICourse objectives]         Course objectives and design.         Image/itention         Image/itention         Image/itention           IO structure of matter, 4 classes: Explain the size of the atoms, which are the basis of matter, and their electron configuration, types of bonds between atoms, the positions of electrons in solid matter, density and thermal expansion, and so on.         2) Production of materials, a classes: Explain redox and the coagulation of meticals, phase equilibrium of materials comprised of two or more chemical elements, and other information concerning the composition of materials.         Mochanical properties, 2 classes: Explain factors behind the change in the mechanical properties of materials weak as addition of chemical elements, anormalizing, quenching, and so on, as well as the easons for these factors.         Sifficula themical elements, recycling of materials, and so on.<	Course nu	ımber	r	U-EN	IG25 35	5008 L.	J71	U-EN	G25	5 35008	LJ77				
Farget year       Indiget students or above       Number of creditts       2       Year/semesters       2023/Second semester         Days and periods       Wed.1       Class style       Lecture       Lagget/institute       Japanese         [Overview and purpose of the course]       In this course, we discuss properties that are important in selecting and using materials, as well as the basic concepts necessary for understanding these properties, focusing on metal.       Imaget/institute       Japanese         [Course objectives]       Course objectives By the end of the course, students will have the basic knowledge they need to pursue further studies in materials science and they will be able to investigate appropriate materials in experimentation and design.       Imaget/institute       Imaget/Instinstitute       Imaget/Instinstitute	Course title (and course title in English) H科基礎学1(エネ原) Fundamentals of Materials 1 of affiliation									tructor's ne, job ti I departn affiliation	br's b title, artment tion Graduate School of Engineering Professor,TAKAGI IKUJI				
Days and periods         Wed.1         Class style         Lecture         Laquege distinct         Japanese           [Overview and purpose of the course]         In this course, we discuss properties that are important in selecting and using materials, as well as the basic concepts necessary for understanding these properties, focusing on metal.         Image: Course objectives         Image: Course: Course of cobjectives         Image: Cou	Target yea	r 21	nd ye	ear students	or above	Numb	oer o	of cred	lits	2	Year	/semesters	2023/Second semester		
[Overview and purpose of the course]         In this course, we discuss properties that are important in selecting and using materials, as well as the basic concepts necessary for understanding these properties, focusing on metal.         [Course objectives]         Course objective: By the end of the course, students will have the basic knowledge they need to pursue further studies in materials science and they will be able to investigate appropriate materials in experimentation and design.         [ICourse schedule and contents]         (1) Structure of matter, 4 classes: Explain the size of the atoms, which are the basis of matter, and their electron configuration, types of bonds between atoms, the positions of electrons in solid matter, density and thermal expansion, and so on.         (2) Production of materials, 3 classes: Explain redox and the coagulation of melts, phase equilibrium of materials.         (3) Mechanical properties, 2 classes: Explain properties related to the structural materials used to support loads such as elastic deformation and plastic deformation, yield strength, creep, and so on.         (4) Change in properties, 2 classes: Explain factors behind the change in the mechanical properties of materials such as addition of chemical elements, annealing, normalizing, quenching, and so on, as well as the treasons for these factors.         (5) Functions of materials, 2 classes: Explain the main functional properties of materials such as conduction of heat and electricity, specific heat, penetration of light, magnetism, and so on.         (7) Confirmation of learning attainment, 1 class: Post explanation discussion and review of examination questions on KULASIS.         [Course r	Days and peric	ods We	ed.1	1	Class	s style		Lecture	e			Language of instruction	Japanese		
In this course, we discuss properties that are important in selecting and using materials, as well as the basic concepts necessary for understanding these properties, focusing on metal.  [Course objective: By the end of the course, students will have the basic knowledge they need to pursue further studies in materials science and they will be able to investigate appropriate materials in experimentation and design.  [Course ochecula and contents] (1) Structure of matter, 4 classes: Explain the size of the atoms, which are the basis of matter, and their electron configuration, types of bonds between atoms, the positions of electrons in solid matter, density and thermal expansion, and so on. (2) Production of materials, 3 classes: Explain redox and the coagulation of melts, phase equilibrium of materials. (3) Mechanical properties, 2 classes: Explain properties related to the structural material sued to support loads such as elastic deformation and plastic deformation, yield strength, creep, and so on. (4) Change in properties, 2 classes: Explain factors behind the change in the mechanical properties of materials such as addition of chemical elements, annealing, normalizing, quenching, and so on, as well as the reasons for these factors. (5) Functions of materials, 2 classes: Explain the main functional properties of materials such as conduction of heat and electricity, specific heat, penetration of light, magnetism, and so on. (7) Confirmation of learning attainment, 1 class: Post explanation discussion and review of examination questions on KULASIS. [Course requirements] Grading method] G	[Overview	and	pu	rpose	of the	cours	e]								
[Course objectives]         Course objective: By the end of the course, students will have the basic knowledge they need to pursue further studies in materials science and they will be able to investigate appropriate materials in experimentation and design.         [Course schedule and contents]         (1) Structure of matter, 4 classes: Explain the size of the atoms, which are the basis of matter, and their electron configuration, types of bonds between atoms, the positions of electrons in solid matter, density and thermal expansion, and so on.         (2) Production of materials, 3 classes: Explain redox and the coagulation of melts, phase equilibrium of materials comprised of two or more chemical elements, and other information concerning the composition of materials such as elastic deformation and plastic deformation, yield strength, creep, and so on.         (3) Mechanical properties, 2 classes: Explain factors behind the change in the mechanical properties of materials such as elastic deformation and plastic deformation, yield strength, creep, and so on.         (4) Change in properties, 2 classes: Explain factors behind the change in the mechanical properties of materials such as addition of chemical elements, annealing, normalizing, quenching, and so on, as well as the reasons for these factors.         (5) Functions of materials, 2 classes: Explain the main functional properties of materials such as conduction of light, magnetism, and so on.         (6) Resources and recycling, 1 class: Discuss information concerning sustainable development such as abundance and reserves of chemical elements, recycling of materials, and so on.         (7) Confirmation of learning attainment, 1 class: Post explanation discussion and review of examination ques	In this cours concepts nec	n this course, we discuss properties that are important in selecting and using materials, as well as the basic concepts necessary for understanding these properties, focusing on metal.													
Course objective: By the end of the course, students will have the basic knowledge they need to pursue further studies in materials science and they will be able to investigate appropriate materials in experimentation and design.  [Course schedule and contents] (1) Structure of matter, 4 classes: Explain the size of the atoms, which are the basis of matter, and their electron configuration, types of bonds between atoms, the positions of electrons in solid matter, density and thermal expansion, and so on. (2) Production of materials, 3 classes: Explain redox and the coagulation of melts, phase equilibrium of materials comprised of two or more chemical elements, and other information concerning the composition of materials. (3) Mechanical properties, 2 classes: Explain properties related to the structural materials used to support loads such as elastic deformation and plastic deformation, yield strength, creep, and so on. (4) Change in properties, 2 classes: Explain factors behind the change in the mechanical properties of materials such as addition of chemical elements, annealing, normalizing, quenching, and so on, as well as the reasons for these factors. (5) Functions of materials, 2 classes: Explain the main functional properties of materials such as conduction of heat and electricity, specific heat, penetration of light, magnetism, and so on. (6) Resources and recycling, 1 class: Discuss information concerning sustainable development such as abundance and reserves of chemical elements, recycling of materials, and so on. (7) Confirmation of learning attainment, 1 class: Post explanation discussion and review of examination questions on KULASIS. [Course requirements] None [Evaluation methods and policy] Grading method] Strade is based on one written examination. Evaluation studard] Must score at least 60 out of 100 on the written examination	[Course o	bject	tive	s]											
[Course schedule and contents]         (1) Structure of matter, 4 classes: Explain the size of the atoms, which are the basis of matter, and their electron configuration, types of bonds between atoms, the positions of electrons in solid matter, density and thermal expansion, and so on.         (2) Production of materials, 3 classes: Explain redox and the coagulation of melts, phase equilibrium of materials comprised of two or more chemical elements, and other information concerning the composition of materials.         (3) Mechanical properties, 2 classes: Explain properties related to the structural materials used to support loads such as elastic deformation and plastic deformation, yield strength, creep, and so on.         (4) Change in properties, 2 classes: Explain factors behind the change in the mechanical properties of materials such as addition of chemical elements, annealing, normalizing, quenching, and so on, as well as the reasons for these factors.         (5) Functions of matterials, 2 classes: Explain the main functional properties of materials such as conduction of heat and electricity, specific heat, penetration of light, magnetism, and so on.         (6) Resources and recycling, 1 class: Discuss information concerning sustainable development such as abundance and reserves of chemical elements, recycling of materials, and so on.         (7) Confirmation of learning attainment, 1 class: Post explanation discussion and review of examination questions on KULASIS.         [Course requirements]         None         [Coardiang method]         Grading method]         Gradi is based on one written examination.         Evaluation tandard] <td>Course object further studio experimenta</td> <th>etive: es in r tion a</th> <th>By mate and c</th> <td>the end erials sc design.</td> <th>of the dience a</th> <th>course, nd they</th> <td>stuc v wil</td> <td>lents wi ll be abl</td> <td>ll ha e to</td> <th>ave the b investig</th> <th>oasic k gate ap</th> <td>nowledge the propriate mate</td> <th>y need to pursue erials in</th>	Course object further studio experimenta	etive: es in r tion a	By mate and c	the end erials sc design.	of the dience a	course, nd they	stuc v wil	lents wi ll be abl	ll ha e to	ave the b investig	oasic k gate ap	nowledge the propriate mate	y need to pursue erials in		
<ul> <li>(1) Structure of matter, 4 classes: Explain the size of the atoms, which are the basis of matter, and their electron configuration, types of bonds between atoms, the positions of electrons in solid matter, density and thermal expansion, and so on.</li> <li>(2) Production of materials, 3 classes: Explain redox and the coagulation of melts, phase equilibrium of materials comprised of two or more chemical elements, and other information concerning the composition of materials.</li> <li>(3) Mechanical properties, 2 classes: Explain properties related to the structural materials used to support loads such as elastic deformation and plastic deformation, yield strength, creep, and so on.</li> <li>(4) Change in properties, 2 classes: Explain factors behind the change in the mechanical properties of materials such as addition of chemical elements, annealing, normalizing, quenching, and so on, as well as the reasons for these factors.</li> <li>(5) Functions of materials, 2 classes: Explain the main functional properties of materials such as conduction of heat and electricity, specific heat, penetration of light, magnetism, and so on.</li> <li>(6) Resources and recycling, 1 class: Discuss information concerning sustainable development such as abundance and reserves of chemical elements, recycling of materials, and so on.</li> <li>(7) Confirmation of learning attainment, 1 class: Post explanation discussion and review of examination questions on KULASIS.</li> </ul> <b>[Course requirements]</b> None <b>[Evaluation methods and policy]</b> Grading method] Grading method] Grading method] Grading method] Was score at least 60 out of 100 on the written examination <b>Continue to 114 Evaluation standard</b> [Mather et al. (1, 2, 2, 5) (2) <b>Continue to 114 Continue to 114</b> <td>[Course se</td> <th>ched</th> <th>ule</th> <td>and co</td> <th>ontent</th> <th>s]</th> <td></td> <td></td> <td></td> <th></th> <th></th> <td></td> <th></th>	[Course se	ched	ule	and co	ontent	s]									
[Evaluation methods and policy] [Grading method] Grade is based on one written examination. [Evaluation standard] Must score at least 60 out of 100 on the written examination	<ul> <li>(1) Structure electron continuer thermal expansion (2) Production materials continuer the structure (2) Production materials (3) Mechanicals (3) Mechanicals (4) Change i materials such as (5) Function of heat and et (6) Resource abundance a (7) Confirmation (7) Confirmation (7) Confirmation (1) Confirmation (1)</li></ul>	figura figura ansion on of 1 mprise cal pro- s elast n pro- ch as a hese f s of m electric es and nd res ation of KUL	ante ation n, an mat ed c ope tic c pert addi facto nate acity l rec serv of le _AS	n, types nd so on cerials, 3 of two o rties, 2 of deforma cies, 2 cl ition of ors. crials, 2 of cycling, res of ch earning IS. ents]	classes: classes: r more classes: tion and asses: H chemic classes: ic heat, 1 class: emical attainm	Is betw s: Explaid chemic Explaid plastic Explain al elem Explaid penetra Discuss element ent, 1 c	ain r ain r al el an pr c de fact ents in th atior ss in tts, r class	redox an lements roperties formation tors beh s, anneal ne main n of ligh formation recycling s: Post e	the p ad the , and s rel. on, y ind ling, func t, m on c g of xpla	ated to t yield structure , norma ctional p agnetism materia	s of ele lation nform he stru ength, nge in lizing, ropert n, and ng sus ls, and liscuss	of melts, phas ation concerni- actural materia creep, and so the mechanica quenching, a ies of material so on. tainable devel l so on. sion and review	d matter, and then d matter, density and se equilibrium of ing the composition of als used to support on. al properties of nd so on, as well as the ls such as conduction opment such as w of examination		
[Grading method] Grade is based on one written examination. [Evaluation standard] Must score at least 60 out of 100 on the written examination	[Evaluatio	n me	etho	ods and	d polic	:v]									
しONTINUE TO M 科本礎子   ( 上 不 原 ) [2)    I	[Grading me Grade is bas [Evaluation Must score a	ethod] ed on standa it least	one ard] st 60	e writter ) out of	i exami 100 on	nation. the wri	tten	examin	atio	n	,		<u> </u>		

## 材料基礎学1(エネ原)(2)

60 or above: pass 59 or below: fail

#### [Textbooks]

Others. In addition, printouts will be distributed in class.

# [References, etc.]

# $(\ {\rm Reference\ books\ })$

Introuced during class

# [Study outside of class (preparation and review)]

Practice problems and their solutions will be discussed in class. Therefore, please go over what you learned after each class.

# (Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

# [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

							未更新			
Course number	U-ENG25 250	009 LJ71								
Course title (and course title in Scienti English)	: (機エネ原:学 fic Measurement	番奇数)		Instructor's name, job ti and departn of affiliation	tle, nent	Graduate School of Engineering Professor, TSUCHIYA TOSHIYUK Graduate School of Engineering Professor, YOKOKAWA RYUUJI Graduate School of Energy Science Associate Professor, KINOSHITA KATSUYUK Graduate School of Energy Science Associate Professor, MIYAKE MASAC Graduate School of Engineering Associate Professor, HIROTANI JUN				
Target year 2nd	year students or above	Number of	f credi	<b>ts</b> 2	Yea	r/semesters	2023/First semester			
Days and periods         Fri.3         Class style         Lecture         Language of instruction         Japanese										
[Overview and p	urpose of the c	ourse]								
Basics of scientific	insturmentaion is	covered.								
[Course objectiv	ves]									
Understanding of th	e basics of scienti	fic instrume	entation	n in engine	ering p	physics.				
[Course schedu	le and contents	;]								
Units and Standards	,2times,Units and	Standards								
Measurement uncer	tainity and its eval	luation,3tim	nes,Me	asurement	uncert	ainity and its e	evaluation			
Data processing and	I statistical analysi	is,3times,Da	ata pro	cessing and	l statis	tical analysis				
Electrical and temp	eature measureme	nt,2times,El	lectrica	and temp	eature	measurement				
Radiation and mater	rial measurement,2	2times,Radi	iation a	nd materia	l meas	urement				
Mechanical measure	ement,2times,Mec	chanical mea	asurem	ent						
[Course require	nents]									
none										
[Evaluation met]	nods and policy	/]								
Examination. Repor	ts are considered	also.								
[Textbooks]										
小寺秀俊、神野郁 (	夫、鈴木亮輔、 J:9784254201598	田中功、冨	雪井洋-	-、中部主	Ē敬、	箕島弘二、横	<b>讣路泰義</b> 『計測工学			
	1.9784294201398									
					(	 Continue to 計測学	(機エネ原:学番奇数) <b>(2)</b>			

計測学(機エネ原:学番奇数)(2)

### [References, etc.]

(Reference books)

NA

# [Study outside of class (preparation and review)]

NA

## (Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

### [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

										未更新	
Course nu	umber	U-ENO	G25 2	5009 LJ71							
Course title (and course title in English) 計測学(機工ネ原:学番偶数) Scientific Measurement Target year 2nd year students or above Number of cree							ructor's ne, job tit I departm ffiliation	:le, nent	Graduate School of Engineering Professor, TSUCHIYA TOSHIYUKI Graduate School of Engineering Professor, YOKOKAWA RYUUJI Graduate School of Energy Science Associate Professor, KINOSHITA KATSUYUKI Graduate School of Energy Science Associate Professor, MIYAKE MASAO Graduate School of Engineering Associate Professor HIROTANI IUN		
Target yea	<b>r</b> 2nd y	ear students o	or above	Number o	of cred	its	2	Year	/semesters	2023/First semester	
Days and perio	periods Fri.3 Class style Lecture Language of instruction Japanese									Japanese	
[Overview	and pu	irpose o	f the	course]							
Basics of sci	ientific in	nsturment	aion i	s covered.							
[Course o	bjective	es]									
- Understandi	ng of the	basics of	scien	tific instrum	nentatio	n in	engine	ering p	physics.		
[Course s	chedule	e and co	ntent	s]							
Basic knowl detection. Intrusion De based IDS b issued from Intrusion De traffic by ma Presentation machine lear	edge on etection by y studyin IDS and etection by achine le ,1time,B rning, an	the role o by Signatung open so communi by Machin arning alg ased on the d discuss	f IDS are-Ba burce acation ae Lea gorithm ne exe it with	in network sed IDS,5tin signature-bans, and addin rning,7time ns and publicrease, studen h other studen	security mes,Lea ased IDS ng signa s,Learn ic datas nts pres ents and	arn t arn t S an ature the et fo ents l ins	d how m the mech d attack es to det method or bench their m structors	naching nanism s, such ect att of cla marki ethods	e learning can n of intrusion of n as correspon acks. Issifying norm ng intrusion d s of intrusion of	help the intrusion detection by signature- idence between alarms hal and malicious letection performance. detection using	
[Course re	equiren	nents]									
None											
[Evaluatio	n meth	ods and	polic	cy]							
Examinatior	1. Report	s are cons	idered	d also.							
[Textbook	s]										
小寺秀俊、 (朝倉書店	神野郁 )ISBN	夫、鈴木 :9784254 <b></b>	亮輔、 20159	田中功、 <sup>18</sup>	<b>冨井洋</b>		中部主	一一。	箕島弘二、樹	专小路泰義 『計測工学』 (機工永原:学番偶数) ( <b>7</b> )	

計測学(機エネ原:学番偶数)(2)

## [References, etc.]

(Reference books)

NA

# [Study outside of class (preparation and review)]

NA

## (Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

### [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

Course number         U-ENG25 25012 LJ52         U-ENG25 25012 LJ75									U-ENG25 2	5012 LJ77		
Course title (and course title in English)	固体物 Solid S	理学 ( tate Ph	〔材エネ原 ysics	宇)	Instructor's name, job title, and department of affiliation			tle, nent	Graduate School of Engineering Professor,NAKAMURA HIROYUKI			
Target year	<b>r</b> 2nd	year stude	ents or above	Number	of cred	lits	2	Yea	r/semesters	2023/Second semester		
Days and perio	ods Thu	.1	Class	style	Lectur	e			Language of instruction	Japanese		
[Overview	and p	urpos	e of the c	ourse]								
Introduction	Introduction to microscopic solid state physics											
[Course o	bjectiv	ves]										
Gateway to a	atomic	and ele	ctronic the	ories for n	neterials	3						
[Course so	chedu	le and	contents	]								
Miller indice various atom Phonon, 2tin mode, phono Introduction Boltzman dis model for sp Introduction electron/harr Free electror distribution, Electrons in insulator Assessment,	es, Brag nic bonc nes, Sor on to stati stributio ecific h to quar monic o n model electroi periodi 1time,	g's law ling und wa stical n on, entr leat of s ntum m oscillato . Thern n specin c poten Assess	ve in elasti nechanics, ropy, state solid, thern echanics, 3 or/hydrogen nal and tran fic heat, res ttial, 1 time, ment	g rule and c body, di Specific h sum and final expans atimes, Int n atom, ph nsport pro sistivity of Effects o	structur spersion eat of so ree ener sion of s roduction ysical q perties of f metals f period	n rel olid, gy, 1 olid on to uan of m , Ha lic p	ation, rep ation, B 3times Einstein o quantu tities an aetal,3tin Il effect otential	arilloui , Introd n mode am med ad oper mes,D t, therr , energ	in zone, acous duction to stat el for specific chanics, Shroo rators ensity of state nal conductiv gy bands, meta	tic mode and optical istical mechanics, heat of solid, Debye linger equation, free s, Fermi-Dirac ity of metals al/semiconductor/		
[Course re	equire	nents	]									
None												
[Evaluatio	n metl	nods a	and policy	/]								
Evaluation w	vill be b	based of	n a final ex	amination	1.							

Continue to 固体物理学(材エネ原宇)(2)

固体物理学(材エネ原宇)(2)

## [Textbooks]

M. Shiga <sup>¶</sup>Introduction to Solid State Physics for Materials Scientists <sub>2</sub> (Uchidarokakuho) ISBN: 9784753655526 (in Japanese)

# [References, etc.]

(Reference books)

C. Kittel <sup>II</sup> Introduction to Solid State Physics (Wiley) ISBN:9780471415268

# [Study outside of class (preparation and review)]

Knowledge on quantum mechanics and statistical mechanics is highly helpful.

## (Other information (office hours, etc.))

										未更新
Course nu	ımbe	r U-ENC	325 35	5013 LJ52	U-EN	G25	35013	LJ77		
Course title (and course title in English)	応用 Appl	電磁気学( <sup>#</sup> lied Electrom	機宇: agneti	:学番奇数 sm	:)	Inst nan and of a	ructor's ne, job tit I departm Iffiliation	tle, nent	Graduate Sch Associate Prof	1001 of Engineering essor,SHIKAMA TAIICHI
Target yea	r 3	3rd year students o	r above	Number o	of cred	its	2	Year	r/semesters	2023/First semester
Days and perio	ods Tr	ue.1	Class	style	Lecture	e			Language of instruction	Japanese
[Overview	and	purpose o	f the	course]						
[Course o	bjec	tives]								
[Course s	ched	lule and co	ntent	s]						
,2?3times,										
,3?4times,										
,2?4times,										
,3 / Sumes, 1time										
, runne,										
[Course re	əquir	rements]								
None										
[Evaluatio	n me	ethods and	polic	;y]						
[Textbook	s]									
[Referenc	es, e	tc.]								
( Referei	nce k	books)								
[Study ou	tside	e of class (p	repa	ration and	d revie	w)]				
(Other in	form	ation (offic	e hou	ırs, etc.) )	1					
*Please visit	KUI	LASIS to find	out a	bout office	hours.					

									未更新				
Course nu	umber	U-ENO	G25 35013 LJ52	U-EN	G25	35013	LJ77						
Course title (and course title in English)	Course title and course title in English)       応用電磁気学(機宇:学番偶数)       Instructor's name, job title, and department of affiliation       Graduate School of Engineering Associate Professor, NAMURA KYOKO												
Target yea	<b>r</b> 3rd y	ear students c	or above <b>Number</b> (	of cred	lits	2	Year	/semesters	2023/First semester				
Days and perio	ods Tue.	1	Class style	Lecture	e			Language of instruction	Japanese				
[Overview and purpose of the course]													
The general properties of Maxwell's equations, which form the fundamental laws of electromagnetism, as well as the generation and propagation of electromagnetic waves and their applications in engineering are aught in lectures.													
[Course o	bjective	es]											
<ul> <li>To under electromagn</li> <li>To under matter</li> <li>To under</li> </ul>	<ul> <li>[Course objectives]</li> <li>To understand the general properties of Maxwell's equations, which form the fundamental laws of electromagnetism</li> <li>To understand the generation and propagation of electromagnetic waves and the optical properties of natter</li> <li>To understand how electromagnetic phenomena are applied in engineering</li> </ul>												
[Course s	chedule	e and co	ntents]										
The lecturer following ite	instructs ems will	s students be taught	by deciding on the state of the	ne order tudent's	and bacl	frequer kground	ncy (1: and le	5 sessions in t evel of unders	otal) in which the standing.				
<ol> <li>Maxwell Maxwell's e</li> <li>Generati The propaga waves, radia related matted (3) Reflection Matters such dispersion, a velocity; dif are explaine</li> <li>Applicat The develop</li> </ol>	The lecturer instructs students by deciding on the order and frequency (15 sessions in total) in which the 'ollowing items will be taught, based on each student's background and level of understanding. 1) Maxwell's equations and their general properties [3-4 sessions] Maxwell's equations and other basic matters are reviewed. 2) Generation and propagation of electromagnetic waves [5-6 sessions] The propagation of electromagnetic waves in a vacuum and waveguide, polarization of electromagnetic waves, radiation of electromagnetic waves from charged particles that undergo accelerated motion and other elated matters are explained. 3) Reflection, refraction and diffraction of electromagnetic waves [4-5 sessions] Matters such as the laws of reflection and refraction at dielectric boundaries; absorption, refraction, dispersion, and reflection of electromagnetic waves; and optical properties of metals, plasma, and other materials are explained. 4) Application and development in physical engineering [1-2 sessions] The development and application of electromagnetic waves in engineering are explained.												
							C	Continue to 応用電磁	滋気学(機宇:学番偶数) <b>(2)</b>				

# 応用電磁気学(機宇:学番偶数)**(2)**

## [Course requirements]

The subject is based on the continuation of electromagnetism, differential and integral calculus, and linear algebra, classes offered by the Faculty of Integrated Human Studies. Students are required to have basic knowledge in vector analysis.

#### [Evaluation methods and policy]

Evaluation is based on the combined grade for tests and submitted materials.

#### [Textbooks]

Others; printouts are distributed in lectures when needed.

#### [References, etc.]

### (Reference books)

Introduced during teaching sessions

#### [Study outside of class (preparation and review)]

- Students must prepare for and review lecture materials distributed in teaching sessions.
- When appropriate, students are asked to submit reports and assignments demonstrating their learning from preparation and review.

### (Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

#### [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

	未更新。										
Course nu	umbe	er U-ENG	G25 3	5013 LJ52	U-EN	G25	5 35013	LJ77			
Course title (and course title in English)	応用 App	]電磁気学( lied Electrom	エネ原 agnet	京) ism		Inst nar anc of a	tructor's ne, job ti I departn affiliation	1001 of Engineering ITOU MANABU			
Target yea	r	3rd year students o	or above	Number o	of cred	its	2	Year	/semesters	2023/First semester	
Days and perio	ods T	ue.1	Class	s style	Lecture	e			Language of instruction	Japanese	
[Overview	anc	l purpose o	f the	course]							
[Course o	bjec	tives]									
[Course s	cheo	dule and co	ntent	s]							
detection. Intrusion De based IDS b issued from Intrusion De traffic by ma Presentation machine lear	etection y stu- IDS etection achina ,1tim rning	on by Signatu dying open so and communi on by Machin e learning alg ne,Based on th , and discuss	re-Ba burce cation le Lea gorithm ne exe it with	sed IDS,5ti signature-ba ns, and addi rning,7time ns and publ rcise, stude h other stud	mes,Lea ased ID ng signa es,Learn lic datas nts pres ents and	arn t S an ature the et fo ents d ins	the mecl ad attack es to det method or bench stheir m structors	hanisn tes, such tect att l of cla umarki tethods	n of intrusion h as correspon acks. Issifying norm ng intrusion d s of intrusion of	detection by signature- idence between alarms hal and malicious letection performance. detection using	
[Course re	equi	rements]									
None											
[Evaluatio	n m	ethods and	polic	¢y]							
[Textbook	s]										
								,	Continue to 広田	雷磁気受(五之百)/2)	
								Ľ	onunue io 心用	电磁X1ナ(エイぶ丿(4)	

応用電磁気学(エネ原)(2)

# [References, etc.]

(Reference books)

[Study outside of class (preparation and review)]

(Other information (office hours, etc.))

Course number	U-ENG25 25014 LJ52	U-ENG	625 25014	LJ57	U-ENG25 2	5014 LJ75						
Course title (and course title in English)	理学(材エネ原宇) Physics	l r c	Instructor's name, job tit and departm of affiliation	tle, nent	Graduate School of Engineering Associate Professor,MAJIMA TAKUYA							
Target year 2nd	year students or above <b>Number</b>	of credit	ts 2	Year	/semesters	2023/Second semester						
Days and periods Fri.3	Class style	Lecture			Language of instruction	Japanese						
[Overview and p	urpose of the course]											
<b>Everyteev and purpose of the course</b> Students are first given an overview of physical phenomena that lead to the discovery of quantum mechanics. Following this, an introduction to quantum mechanics is given using concrete examples to provide a clear outline of various phenomena in the microscopic world, such as atoms and molecules, and the laws that are derived from them.												
[Course objectiv	es]											
Targets include unde various laws in the n quantum mechanics.	erstanding phenomena that nicroscopic world that relat	cannot be te to atom	e described is and mole	l in cla ecules,	ssical physics , and acquirin	s, understanding g basic knowledge for						
[Course schedul	e and contents]											
Targets include understanding phenomena that cannot be described in classical physics, understanding various laws in the microscopic world that relate to atoms and molecules, and acquiring basic knowledge for quantum mechanics.  [Course schedule and contents] Atomic theories, 1 session: atomic theory of natural philosophy, atomic theory of chemistry, atoms and nuclei, structure of nuclei and elementary particles, current image of elementary particles Kinetic theory of gases, 2 sessions: atomic theory of chemical reactions, basic assumptions of the kinetic theory of gases, pressure and temperature of gases, specific heat of matter, law of the distribution of energy, and velocity of molecules Heat radiation and energy quantum, 2 sessions: properties of heat radiation, Stefan-Boltzmann law, Wien's displacement law, classical radiation formulas (Rayleigh-Jeans, Wien), Planck's radiation formula and energy quantum Photons and electrons, 2 sessions: electrons and their particle properties, the discovery of electrons, beta particles, photoelectric effect, Compton effect Atomic models and the quantum condition (old quantum theory), 1 session: theory on the structure of electrons and atoms, Thomson and Nagaoka ' s atomic models, discovery of the atomic nucleus/Rutherford ' s atomic model. Bohr's atomic model Wave function and uncertainty principle (introduction to quantum mechanics), 1 session: fluctuation of electrons, de Broglie wave, double-slit experiment, interpretation of wave function Schrodinger equation and its solution, 2 sessions: operator, expected value, time-independent Schrodinger equation, steady state, eigenvalue equation, square-well potential Quantum mechanical description of a hydrogen atom, 3 sessions: spherical coordinate system, particle in a central potential, angular momentum operator, spherical harmonics, wave function, and energy level of a hydrogen atom Confirmation of learning achieved, 1 session: the degree of learning achieved so far is confirmed												

Continue to 原子物理学(材工ネ原宇)(2)

# 原子物理学(材エネ原宇)**(2)**

# [Course requirements]

Classical mechanics, electromagnetism, thermodynamics

#### [Evaluation methods and policy]

Students are evaluated through a test. A raw score is given as their evaluation.

#### [Textbooks]

Not used

#### [References, etc.]

#### (Reference books)

Others; Hatakeyama, A., Ryoushirikigaku, (Nihon Hyouronsha, 2017) ISBN-10: 4535860411, Mafune, F., Ryoushi kagaku kiso kara no apuroochi,, (Kagaku-Dojin, 2007) ISBN-10: 4759810846, Kikuchi, K., Genshi butsurigaku bishiteki butsurigaku nyuumon, (Kyoritsu Shuppan, 1969) ISBN-10: 4320030478,

etc.

#### (Related URLs)

()

### [Study outside of class (preparation and review)]

Students should read materials such as introductory books on topics covered in lectures to gain an understanding of how the study of physics has emerged throughout history.

### (Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

#### [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

Course number	U-ENG	G25 35018 LJ71	U-ENG25	5 35018 ]	LJ75	U-ENG25 3	5018 LJ77						
Course title (and course title in English)	Course title and course title in English) 量子物理学 1 (機:学番奇数) Quantum Physics 1 and department English)												
Target year 3rd	year students c	or above <b>Number</b>	of credits	2	Year	/semesters	2023/Second semester						
Days and periods Fri.	3	Class style	Lecture			Language of instruction	Japanese						
[Overview and purpose of the course]													
In this subject, lectures focus on helping students understand the main concepts underlying quantum mechanics and quantum statistical mechanics, as well as deepening their quantum mechanical understanding of the structure of an atom, structure of a molecule, and the electronic structure of a solid material.													
[Course objectiv	ves]												
To master the main deepen one's quant the electronic struc	concepts u um mechan ture of a so	inderlying quant iical understandi lid material.	um mechanion ng of the stru	cs and qu acture of	uantum Fan atc	n statistical m om, the struct	nechanics, and to ure of a molecule, and						
[Course schedu	le and co	ntents]											
(1) Development of Students receive an experimental facts develop an understa (2) Principles of qu Students are introdu understanding of di interpretation and p operators that revea properties of eigent functions.	[Course schedule and contents] (1) Development of quantum mechanics [1-2 weeks] Students receive an overview of Rutherford's atomic model and its difficulties, Bohr's atomic model, experimental facts that show light particulates and the fluctuation of electrons, etc. In addition, students develop an understanding of the limits of classical mechanics and the necessity of quantum mechanics. (2) Principles of quantum mechanics [4 weeks] Students are introduced to wave functions and the Schrodinger equation. Further, students gain an understanding of differences between classical mechanics and quantum mechanics by studying the interpretation and properties of wave functions, expected values of physical quantities, and the properties of operators that reveal observable physical quantities. By examining the eigenvalues of operators and the properties of eigenfunctions, students also develop an understanding of the superposition principle of wave												
<ul> <li>(3) Motion in one dimension [2-3 weeks]</li> <li>(3) Motion in one dimension [2-3 weeks]</li> <li>Students are asked to think about the motion of a one-dimensional free particle when there is no external field. By examining the motion of particles when potential hills are present, and studying reflection via potential nills and the transmission phenomena of potential hills, students also gain an understanding of the tunneling effect. In addition, the bound state is explained using the square-well potential as an example.</li> <li>(4) Harmonic oscillator [2-3 weeks]</li> <li>Students review harmonic oscillation in classical mechanics and derive the wave function of a one-dimensional harmonic oscillator. Based on this, students are asked to think about the motion of a nultidimensional harmonic oscillator and are given an explanation of the Einstein model of specific heat.</li> <li>(5) Hydrogen atom [4 weeks]</li> <li>Students are asked to think about motion in a spherically symmetric field using a hydrogen atom as an example. Next, polar coordinates are introduced to allow students to separate a wave function into angular and radial parts. Then, an explanation is given on angular momentum in quantum mechanics. Following this, tudents are asked to obtain the wave function of a budrogen atom as an example.</li> </ul>													
	•				C	ontinue to 量子物	理学1(機:学番奇数) <b>(2)</b>						

量子物理学1(機:学番奇数)**(2)** 

spectrum of a hydrogen atom. Based on the outcome of these activities, the wave function of a multi-electron atom is then examined generally, and an explanation is given on atomic analyses performed via atomic spectroscopy and Auger electron spectroscopy. In addition, students also gain an understanding of the origin of covalent bonds using a hydrogen molecule as an example.

#### [Course requirements]

None

## [Evaluation methods and policy]

[Evaluation method]

Evaluation is conducted through a short-answer test.

[Evaluation criteria]

Students must obtain at least 60 out of 100 marks in the short-answer test

60 marks or above: Pass

59 marks or below: Fail

In addition, up to 30% of the report assignments given during teaching sessions may be added to the above evaluation.

### [Textbooks]

Others; none

### [References, etc.]

### (Reference books)

Others; there are many textbooks, but any basic textbook will suffice.

### [Study outside of class (preparation and review)]

• Students must prepare for and review lecture materials distributed in teaching sessions.

• When appropriate, students are asked to submit reports and assignments demonstrating their learning from preparation and review.

### (Other information (office hours, etc.))

Students are divided into two classes, and lectures on the above contents are given in the same time slots.

\*Please visit KULASIS to find out about office hours.

# [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

Continue to 量子物理学1(機:学番奇数)(3)

量子物理学1(機:学番奇数)**(3)** 

											未更新
Course nu	ımbe	er	U-EN	NG25 3:	5018 LJ71	U-EN	G25	35018	LJ75	U-ENG25 3	5018 LJ77
Course title (and course title in English)	量子 Quai	<sup>2</sup> 物理 ntum	閏学1( i Physic	〔機: s 1	学番偶数)		Inst nan and of a	ructor's ne, job tit I departm Iffiliation	tle, nent	Graduate Scl Associate Prof	nool of Engineering essor,NAKAJIMA KAORU
Target yea	r :	3rd ye	ar students	s or above	Number	of cred	lits	2	Year	r/semesters	2023/Second semester
Days and perio	ods Fi	ri.3		Class	s style	Lectur	e			Language of instruction	Japanese
[Overview	and	d pu	rpose	of the	course]						
[Course o	bjec	tive	s]								
[Course s	chec	dule	and c	ontent	s]						
[Course re	equi	rem	ents]								
None											
[Evaluatio	n m	ethc	ods an	d polic	cy]						
examination	and	hom	ework								
[Textbook	s]										
[Reference	es, e	etc.]									
(Referer	nce l	bool	ks)								
[Study out	tside	e of	class (	(prepa	ration an	d revie	w)]				
( Other inf	form	natio	n (offi	ce hou	urs, etc.) )	)					
*Please visit	KU	LAS	IS to fir	nd out a	bout office	e hours.					

Course nu	Imber	U-ENG25 35	5018 LJ71	U-EN	G25 35018	LJ75	U-ENG25 3	5018 LJ77					
Course title (and course title in English)	Course title (and course title in English)量子物理学1(材原宇) 情報Instructor's name, job title, and department of affiliationGraduate School of Engineering Professor,MIYADERA TAKAYUKI												
Target yea	<b>r</b> 3rd y	ear students or above	Number	of cred	lits 2	Year	/semesters	2023/First semester					
Days and perio	ods Fri.2	Class	style	Lecture	e		Language of instruction	Japanese					
[Overview and purpose of the course]													
Quantum theory is one of the most successful theories in the modern physics. It explains well a lot of peculiar phenomena which can not be understood within the classical theory. The main purpose of this course is to understand the fundamental mathematical structure of the quantum theory. We may use online materials. Check PandA in advance.													
[Course o	bjective	es]											
An importan theory. In ad mechanical j	[Course objectives] An important purpose of this course is to understand the fundamental mathematical structure of the quantum heory. In addition one is hoped to become capable to calculate some basic properties of a quantum nechanical particle on one-dimensional space.												
[Course s	chedule	e and content	s]										
<ol> <li>Introducti</li> <li>Mathemati</li> <li>Mathemati</li> <li>Mathemati</li> <li>Mathemati</li> <li>Mathemati</li> <li>Mathemati</li> <li>One partici</li> <li>Potential p</li> <li>Potential p</li> <li>Potential p</li> <li>Square v</li> <li>Scatterini</li> <li>Harmoni</li> <li>Harmoni</li> <li>Summari</li> </ol>	<b>Course objectively</b> An important purpose of this course is to understand the fundamental mathematical structure of the quantum heory. In addition one is hoped to become capable to calculate some basic properties of a quantum heory. In addition one is hoped to become capable to calculate some basic properties of a quantum heory. In addition one dimensional space. <b>Course schedule and contents</b> Introduction. Wave mechanics and matrix mechanics. Mathematical structure of quantum theory (1) State and observable. Mathematical structure of quantum theory (2) Hilbert space and state vectors. Mathematical structure of quantum theory (3) operators and observables Mathematical structure of quantum theory (4) Schroedinger equation and time evolution One particle on one-dimensional space (1) classical theory and its quantization One particle on one-dimensional space (2) CCR and Robertson's uncertainty relation Potential problem (1) General theory Potential problem (2) General theory and its mathematical addendum 0. Square well potential 1. Box potential 2. Scattering theory 3. Harmonic oscillator (1) 4. Harmonic oscillator (2) 5. Summary												
[Course re	equiren	nents]											
Classical me	chanics,	Linear algebra											
[Evaluatio	n meth	ods and polic	y]										
【Evaluation Evaluation 【Evaluation	n method n will be n policy	i 】 based on report 】	s.										
						C	ontinue to 量子物理	理学1(材原宇) 情報 <b>(2)</b>					
## 量子物理学1(材原宇) 情報 (2)

The result of reports should be 60 and above out of 100. 60 and above: Passed 59 and below: Failed

#### [Textbooks]

Not used

#### [References, etc.]

#### (Reference books)

Modern Quantum Mechanics (J.J.Sakurai) isbn{}{9780805382914} isbn{}{9781292024103} Lectures on Quantum Theory (C.J. Isham) isbn{}{1860940013}

## [Study outside of class (preparation and review)]

Clarify what you have learnt and what you do not understand. Solve a problem set which will be distributed.

#### (Other information (office hours, etc.))

Send an email.

\*Please visit KULASIS to find out about office hours.

#### [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

(3) Details of practical classes delivered based on instructors ' practical work experience

Course nu	umbei	r U-ENO	G25 45(	019 LJ71	U-EN	G25	45019	LJ75	U-ENG25 4	5019 LJ77	
Course title (and course title in English)	量子 Quan	物理学2( <sup>ヵ</sup> itum Physics	機) 2			Instructor's name, job title, and department of affiliation			Graduate School of Engineering Professor,HASUO MASAHIRO		
Target yea	<b>r</b> 4	th year students o	r above <b>N</b>	Number o	of cred	its	2	Year	/semesters	2023/First semester	
Days and perio	ods W	ed.1	Class	style	Lecture	e			Language of instruction	Japanese	
[Overview	and	purpose o	f the c	ourse]							
[Course o	biect	ivesl									
•	•	•									
10						_					
[Course s	ched	ule and co	ntents	]							
,3times, 3times											
,1?2times,											
,1?2times,											
,2times,											
,3times,											
,1time,											
[Course re	equir	ements]									
None											
[Evaluatio	on me	ethods and	policy	/]							
[Textbook	s]										
[Referenc	es, e	tc.]									
( Referei	nce b	ooks)									
[Study ou	tside	of class (p	orepara	ation and	d revie	w)]					
( Other in	form	ation (offic	e hour	rs, etc.) )							
*Please visit	t KUL	ASIS to find	l out ab	out office	hours.						

Course number	Course number         U-ENG25 45019 LJ71         U-ENG25 45019 LJ75         U-ENG25 45019 LJ77									
Course title (and course title in English)	理学2(材原 <sup>:</sup> m Physics 2	宇) 情報	ž i ž	nstructor's name, job ti and departn of affiliation	tle, nent	Graduate Sch Professor,MI	nool of Engineering YADERA TAKAYUKI			
<b>Target year</b> 3rd y	vear students or above	Number	of credit	<b>:s</b> 2	Year	/semesters	2023/Second semester			
Days and periods Tue.	1 Clas	s style	Lecture			Language of instruction	Japanese			
[Overview and pu	urpose of the	course]								
Quantum theory is a	n astonishing th	eory. It des	cribes pe	rfectly a lo	ot of pl	nenomena insp	oite of its peculiar			
mathematical formul	lation.	2	I	5	1	1	1			
An important purpos	se of this course	is to under	stand the	formulatio	on and	to become ca	pable to manipulate it.			
We may use online r	materials. Checl	x PandA in	advance.							
[Course objective	es]									
To understand the fu	Indamental stru	cture of qua	antum the	ory.						
To be able to calcula	ate some proper	ties of quan	tum mecl	nanical par	ticle in	n three dimen	sional space.			
[Course schedule	e and conten	ts]								
1. Fundamental fram	nework									
2. Angular momentu	ım (1)									
3. Angular momentu	m(2) generator	f of space re	otation							
4. Eigenvalue of Ang	gular momentui	n operator.	SU(2) an	d SO(3)						
5. Spin										
6. Central potential										
7. Hydrogen atom										
8. perturbation theor	$\mathbf{y}(1)$									
9. perturbation theor	y(2)									
10. Interaction pictur	re									
12. Bell's inequality										
13. Mixed state										
14. Many particle an	d Quantum fiel	d								
15. Applications to c	quantum inform	ation								
[Course requiren	nents]									
Quantum Physics 1										
[Evaluation meth	ods and poli	cy]								
Evaluation metho	d ]									
Evaluation will be	e based on repor	ts.								
Evaluation policy	]									
The result of report	rts should be 60	and above	out of 10	0.						
60 and above: F	Passed									

量子物理学 2 (材原宇) 情報 <b>(2)</b>
59 and below: Failed
[Textbooks]
Not used
[References, etc.]
(Reference books) Modern Quantum Mechanics (J.J.Sakurai) isbn{}{9780805382914} isbn{}{9781292024103} Lectures on Quantum Theory (C.J. Isham) isbn{}{1860940013}
[Study outside of class (preparation and review)]
Solve a distributed problem set.
(Other information (office hours, etc.))
Send an email.
*Please visit KULASIS to find out about office hours.
[Courses delivered by instructors with practical work experience]
(1) Category A course with practical content delivered by instructors with practical work experience
(2) Details of instructors ' practical work experience related to the course
(3) Details of practical classes delivered based on instructors ' practical work experience

Course nur	mber	U-ENO	G25 3	5020 LJ71							
Course title (and course ) title in ( English)	連続体; Continu	力学(エ um Mecha	ネ) anics			Instructor's name, job title, and department of affiliation			Graduate Sch Professor,IM	nool of Energy Science ATANI SHIYOUJI	
Target year	3rd y	ear students o	r above	Number	of cred	lits 2	2	Year	/semesters	2023/First semester	
Days and period	<b>ds</b> Fri.3		Class	s style	Lectur	e			Language of instruction	Japanese	
[Overview	and pu	irpose o	f the	course]							
[Course ob	jective	es]									
[Course sc	hedule	and co	ntent	s]							
Basic assump Vectors and t Fundamental Constitutive f Potential theo Wave motion Stabilities,2ti Examination,	otions,1 ensors,2 laws,2 framewo pries,2ti s,2time mes, 1 times	times, 2times, times, ork,3times mes, s,	З,								
[Course ree	quirem	nents]									
None											
[Evaluation	n meth	ods and	polic	¢y]							
[Textbooks	6]										
[Reference	s, etc.										
(Referen	ce boo	oks)									
[Study outs	side of	class (p	repa	ration and	d revie	w)]					
( Other info	ormatio	on (offic	e hou	urs, etc.) )							
*Please visit	KULAS	SIS to find	l out a	bout office	hours.						

Course nu	ımber	U-ENG25 3	5020 LJ71										
Course title (and course title in English)	連続体; Continu	力学(機) um Mechanics			Instruc name, j and de of affili	tor's job tit partm ation	le, ient	Institute for L Professor,AI	e for Life and Medical Sciences sor,ADACHI TAIJI				
Target yea	r 3rd y	ear students or above	Number	of cred	its 2		Year	/semesters	2023/Second semester				
Days and perio	ods Tue.3	3 Class	s style	Lecture	e			Language of instruction	Japanese				
[Overview	and pu	urpose of the	course]										
This lecture provides an introduction to the theory of continuum mechanics for its application to the fields of bioengineering and biomedical engineering.													
[Course o	bjectiv	es]											
Students wil of living tiss	Students will be able to understand tensor analysis and continuum mechanics, and to apply them in modeling of living tissues and cells.												
[Course s	chedul	e and content	s]										
1) Introdu	ction to	continuum mec	hanics										
<ol> <li>Mathen Matrix algeb</li> <li>, 4 ) Ve</li> <li>Cartesian ten</li> <li>operator, Dir</li> </ol>	natical p ora, Inde ectors an nsors, Sc vergence	reliminaries x notation, Sum d tensors calar and vector e theorem	mation con products, E	ovention Dyadic p	, Eigen roduct,	value Coo	es and o	eigenvectors e transformati	ion,Invariants, Nabla				
5,6) Ki Bodies and o	nematic configura	s ations, Displace	ment, Strai	n tensor	, Comp	oatibi	lity, M	aterial time d	lerivative				
7,8)Str Force and st	ress and ress, Stre	equilibrium ess tensor, Tract	ion, Cauch	y stress,	Princi	pal st	resses,	, Equation of	equilibrium				
9,10) Mass conser	Conserv vation, I	ation Laws and Linear and angu	governing lar moment	equation tum, The	ns e first la	aw of	f therm	odynamics fo	or continua				
1 1 , 1 2 Constitutive symmetry, E	) Const equation biologica	titutive models ns, Stress-strain ll tissues	relationshi	p, Linea	r elasti	city,	Newto	nian viscous	fluids,Material				
13,14 Differential	13, 14) Boundary value problems Differential equations with a set of boundary conditions, Navier-Stokes equation, Navier's equation												
1 5 ) Feed Application	backs	nuum mechanic	s to the ana	lyses of	biolog	ical t	issues,	Introduction	to biomechanics				
Continue to 連続体力学(機)(2)													

## 連続体力学(機)**(2)**

# [Course requirements]

None

#### [Evaluation methods and policy]

Exam 100 (+ Reports max 10)

## [Textbooks]

安達泰治、冨田佳宏 『連続体力学の基礎(第2版)』(養賢堂, 2022)ISBN:ISBN-10: 4842505907

#### [References, etc.]

(**Reference books**) Introduced during class

# [Study outside of class (preparation and review)]

## (Other information (office hours, etc.))

Course nu	umber	U-ENC	G25 3502	3 LJ28	U-EN	G25	35023	LJ71	U-ENG25 3	5023 LJ77		
Course title (and course title in English)	エネル Energ	ルギー変換 gy Conversio	工学(エ m	ニネ)		Inst nan and of a	ructor's ne, job ti departn ffiliation	tle, nent	Graduate School of Engineering Professor,KUROSE RYOUICHI Graduate School of Energy Science Professor,Jun HAYASHI			
Farget yea	<b>r</b> 3r	d year students o	or above <b>Nu</b>	umber o	of cred	its	2	Year	/semesters	2023/First semester		
Days and perio	ods Fri	i.2	Class st	tyle	Lecture	e			Language of instruction	Japanese		
[Overview	and	purpose o	f the co	urse]								
Various ener conversion p	rgy so proces	urces and en ses and therr	ergy con nodynam	version s nics treat	systems ments f	wil or th	l be out ne effec	lined. tive us	Also, basic m e of energy w	atters on energy ill be lectured.		
[Course o	bject	ives]										
From this cla put in the cu system, envi	ass, fu irrent s ironme	indamental is situation of e ental measure	ssues rela energy res es are con	nted to en sources, mprehen	nergy co latest te sible.	onve chn	ersion er ologies	nginee of ene	ring are learno rgy conservat	ed, as well as a target is ion and new energy		
[Course s	ched	ule and co	ntents]									
Energy sourd ,3?4times, ,3?4times, ,3?4times,	ce and	l energy con	version s	ystem,3	?4times,	* Ei	nergy re	esource	es			
[Course re	equire	ements]										
Knowledge	of the	rmodynamic	s is requi	red.								
[Evaluatio	on me	thods and	[volico									
Achievemen	nt will	be synthetic	ally evalu	uated fro	om atten	dan	ce, repo	ort and	final examina	ition.		
[Textbook	s]											
- Nothing. Pri	nt mat	terial is prop	erly distr	ibuted.								
[Reference	es, et	c.]										
(Referen	nce b	ooks )										
It will be int	roduce	ed, if necessa	ary.									
[Study out	tside	of class (p	oreparat	ion and	d revie	w)]						
( Other inf	forma	ation (office	e hours	, etc.) )								

Course nu	ımber	U-ENO	G25 35	5023 LJ28	U-EN	G25	5 35023	LJ71	U-ENG25 3	5023 LJ77
Course title (and course title in English)	エネル Energy	ギー変換 Conversic	工学( on	(機)		Inst nan and of a	tructor's ne, job tit I departm affiliation	le, ient	Graduate Sch Professor,KU Graduate Sch Professor,Jun	nool of Engineering JROSE RYOUICHI nool of Energy Science HAYASHI
Target yea	<b>r</b> 4th y	ear students c	or above	Number o	of cred	its	2	Year	/semesters	2023/First semester
Days and perio	ods Fri.2		Class	s style	Lecture	e			Language of instruction	Japanese
<b>[Overview</b> エネルギー 熱エネルギ の変換,機 する基礎的	and pu システ ー,化 械エネ 事項、	<b>Jrpose o</b> ムの基本( 学エネル <sup>:</sup> ルギーと) エネルギ	f the 的な考 ギーン 執 一 有 交	<b>course]</b> きえ方を身 およびエ 、ルギーの か利用に関	につけ ネ変し て 講	るーな述	こめに, 変換過程 ご)につ 「る。	各種 (化 いて れて	エネルギー源 学エネルギー 既説し、エネ	(機械エネルギー, から熱エネルギーへ ルギー変換過程に関
[Course o	bjectiv	es]								
エネルギー ・新エネル	変換工 ギーシ	学に関す ステム技	る基本 術、環	s的事項を 環境対策な	習得す どに関	るとする	こともに 3問題意	、エン 識を調	ネルギー資源 高めることに	事情、省エネルギー 目標を置く。
[Course s	chedul	e and co	ntent	s]						
諸・・ エ・・・・・・ エ・・論エエ ネ機熱化種工 ネ化機不 小械工学々ク ル学械 ギエネエのセ ギエエーネルネエル ーネネ	回一一 源ルギルネギ 変ルル)の資 (ギーギルー 換ギギ・・形源 4- ーギの 過ーー	態	おの 回ネルけ防 )ルギー	3エクセル ニ ニ - の変換	ギー 換					
エネルギー ・自然エネ ・エネルギ	利用(3 ルギー ーの輸う	2×14回) ,バイオ <sup>・</sup> 送と貯蔵	: マスコ	ニネルギー	及び廃	棄牧	のエネ	ルギ・	一利用	
[Course re	equiren	nents]								
熱力学を学 	習して(	<u> 13こと</u> :	を前扱 	<b>₽ − − −</b>				<sub>c</sub>	ontinue to エネノ	レギー変換工学(機) <b>(2)</b>

## エネルギー変換工学(機)**(2)**

#### [Evaluation methods and policy]

出席状況、レポート、ならびに学期末試験等を総合して到達目標への達成度を評価する(初回の講 義で説明する)。

#### [Textbooks]

プリント資料等を適宜配布する。

#### [References, etc.]

(Reference books) 日本機械学会 「エネルギー工学」

#### [Study outside of class (preparation and review)]

授業の前に,身の回りにある様々なエネルギーの形態およびそれら相互の変換過程について,予備 的に考察しておくことが望ましい.また,授業後は講義内容を復習し,各種エネルギー変換システ ムの原理と適正な評価の方法,設計・制御の指針,等について理解しておく.

## (Other information (office hours, etc.))

上記各項目の講義順序および時間配分は、年度によって異なることがある。 資料等の配布は電子的に行う場合がある.

Course number         U-ENG25 35023 LJ28         U-ENG25 35023 LJ71         U-ENG25 35023 LJ77									5023 LJ77			
Course title (and course title in English)	エネ Energ	ルギ- gy Coi	-変換] nversio	工学( n	(原)		Inst nan and of a	ructor's ne, job tit I departm ffiliation	le, ient	Graduate School of Engineering Senior Lecturer,KAWARA ZENSAKU Graduate School of Engineering Professor,YOKOMINE TAKEHIKO		
Target yea	<b>r</b> 3	ord year s	students of	r above	Number	of cred	its	2	Year	/semesters	2023/First semester	
Days and perio	ods M	on.1		Class	s style	Lecture	e			Language of instruction	Japanese	
[Overview	and	purp	ose of	f the	course]							
[Course o	bject	tives]										
[Course se	ched	lule a	nd cor	ntent	s]							
,2times,												
,4times, ,2times,												
,3times,												
,3times, 1time												
, i unite,												
[Course re	equir	emer	nts]									
None												
[Evaluatio	n me	ethod	Is and	polic	;y]							
[Textbook	sl											
•	•											
[Reference	es, e	tc.]										
( Referer	nce b	ooks	;)									
[Study out	tside	of cl	lass (p	repa	ration and	d revie	w)]					
( Other inf	form	ation	(office	e hou	ırs, etc.) )							
*Please visit	KUL	LASIS	to find	out a	bout office	hours.						

Course numb	er U-EN	G25 35	5024 LJ71	U-EN	G25	35024	LJ77			
Course title (and course 振動 title in Vit English)	動工学(機) pration Engine	ering			Instructor's name, job title, and department of affiliation			Graduate School of Engineering Senior Lecturer,NAKANISHI HIROAKI Graduate School of Engineering Professor,KOMORI MASAHARU Graduate School of Engineering Professor,MATSUBARA ATSUSHI		
Target year	t year 3rd year students or above Number of credits 2 Year/semesters 2023/Second semes									
Days and periods	Wed.1	Class	s style	Lecture	e			Language of instruction	Japanese	
[Overview an	d purpose c	of the	course]							
[Course obje	ctives]									
	-									
[Course sche	edule and co	ontent	s]							
,3times,			-							
,3times,										
,1time, ,4times,										
,3times,										
,1time,										
[Course requ	irements]									
None										
[Evaluation n	nethods and	l polic	;y]							
[Textbooks]										
[References,	etc.]									
(Reference	books )									
L										
								Continue to 排	最動工学(機) <b>(2)</b>	

# 振動工学(機)**(2)**

# [Study outside of class (preparation and review)]

(Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

## [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

(3) Details of practical classes delivered based on instructors ' practical work experience

Course nu	Course number         U-ENG25 35024 LJ71         U-ENG25 35024 LJ77											
Course title (and course title in English)	振重 Vib	助工≞ ratio	学(宇) 'n Enginea	ering			Instructor's name, job title, and department of affiliation					
Target yea	r	2nd y	ear students (	or above	Number	of cred	lits	2	Year	/semesters	2023/Second semester	
Days and perio	ods N	Mon.	3	Clas	s style	Lectur	e			Language of instruction	Japanese	
[Overview	an	d pu	irpose o	f the	course]							
[Course o	bje	ctive	es]									
[Course s	che	dule	and co	ntenf	is]							
,1time,												
,2times,												
,2000 ,2000												
,2times,												
,3times,												
,3times,												
[Course re	equi	irem	ients]									
None												
[Evaluatio	n m	neth	ods and	poli	cy]							
[Textbook	(s]											
[Referenc	es,	etc.										
(Referer	nce	boo	<b>ks</b> )									
[Study out	tsid	le of	class (r	orepa	ration an	d revie	w)]					
(Other inf	forn	natio	on (offic	e hoi	urs, etc.) )	)						
*Please visit	t KU	JLAS	SIS to find	l out a	about office	e hours.						

												未更新
Course nu	ımbe	er	U-EN	IG25 350	)25 LJ71	U-EN	G25	35025	LJ77			
Course title (and course title in English)前御工学1(機工ネ原:学番奇数)Instructor's name, job title, and department of affiliationGraduate School of Engineerin Professor, KOH HOSODA Graduate School of Engineerin Associate Professor, ENDO TAKA										neering A neering A K A H I R O		
Target yea	r :	3rd yea	r students	or above <b>N</b>	lumber	of cred	lits	2	Year	/semesters	2023/First	semester
Days and perio	ods T	'hu.1		Class	style	Lecture	e			Language of instruction	Japanese	
[Overview	and	l pur	pose	of the c	ourse]							
[Course o	bjec	tives	3]									
[Course s	chec	dule	and co	ontents	]							
,1time, ,3times, ,2times, ,2-3times, ,3times, ,2-3times, ,1time,												
[Course re	equir	reme	ents]									
None												
[Evaluatio	n m	etho	ds and	d policy	<b>′]</b>							
[Textbook	s]											
[Reference	es, e	etc.]										
(Referer	ıce k	book	( <b>S</b> )									
[Study ou	tside	e of (	class (	prepara	ation and	d revie	w)]					
( Other in	form	natio	n (offi	ce hour	<b>s, etc.)</b> )	)						
*Please visit	: KUI	LASI	S to fir	nd out ab	out office	e hours.						

									未更新			
Course nu	umber	U-ENG2	25 35025 LJ71	U-EN	G25	35025	LJ77					
Course title (and course title in English)	制御 Contre	工学1(機工 ol Engineering	: <b>ネ原:学番偶</b> g 1	数)	Inst nam and of a	ructor's ne, job ti departn ffiliation	tle, nent	Graduate School of Informatics Professor,OHTSUKA TOSHIYUKI Graduate School of Informatics Associate Professor,SAKURAMA KAZUNORI				
Target yea	<b>r</b> 3r	d year students or a	above Number o	of cred	its	2	Year	/semesters	2023/First semester			
Days and perio	Days and periods       Thu.1       Class style       Lecture       Language of instruction       Japanese											
[Overview	and	purpose of t	the course]									
Control Eng systematic w class describ	ineerin vay. Its bes the	ng provides a n s major part co fundamentals	methodology of onsists of both ( s of Classical Co	f contro Classica ontrol T	lling ll Co heoi	g variou ontrol Tl ry.	s syste heory a	ms including and Modern C	mechanical ones in a Control Theory. This			
[Course o	bjecti	ives]										
The course § frequency re	The course goal is to understand the basic concepts of Classical Control Theory such as transfer functions, frequency responses and stability.											
[Course s	chedu	ule and cont	tents]									
Introduction described th Representation representation Responses of Stability test Properties of control system Frequency re- introduced. ' Design of co- Phase Lag,	, I time rough on of 6 of Trai on is sl f dyna is are c f feedt is are c f feedt is an c spons The sta ontrol s and PI	2, The basic ide various real w dynamical sys nsfer Function hown. mical systems described. back systems,2 d Root Locus ses,3-4times,The ability test of f systems,2times D compensation	ea of Control Er yorld examples. stems,2-3times, as is introduced s,3times,Time r 2-3times,Basic p are explained. The concept of F feedback system s,Basic comportion are describe	Mathem based of esponse properti Frequence ns based nents of d.	ng s natic on La es of es su es su cy re l on clas	uch as t al descr aplace 7 linear s uch as s esponses the frec sical co	he pur iption Fransfo ystems teady s teady s s, Bode juency ntrolle	pose and method of systems is orm, and Bloc s are shown. S state character e diagrams, V responses is o er design method	hods of control is developed first. Then, k diagram Stability of systems and ristics of feedback ector locus are explained. hods such as Phase lead,			
[Course re	equire	ements]										
Elementary	knowl	edge of Laplac	ce Transform is	s require	ed.							
[Evaluatio	n me	thods and p	olicy]									
Scores of qu	izzes,	reports and the	e regular exam	ination :	are t	aken in	to acco	ount.				

Continue to 制御工学1 (機工ネ原:学番偶数 ) (2)

制御工学1(機エネ原:学番偶数)(2)

## [Textbooks]

T. Sugie, M. Fujita: Introduction of Feedback Control. Corona Publishing Co. Ltd. isbn{}{9784339033038}

#### [References, etc.]

## (Reference books)

T. Sugie, H. Kajiwara: Exercises in System Control Engineering. Corona Publishing Co. Ltd. isbn{}{ 9784339033069}

## (Related URLs)

(none)

## [Study outside of class (preparation and review)]

## ( Other information (office hours, etc.) )

Some parts of the above contents may be skipped/added depending on the course schedule of the year.

						未更新					
Course number	U-ENG25 35025 LJ71	U-ENC	G25 35025	LJ77							
Course title (and course title in English)	学1(宇) Engineering 1		Instructor's name, job ti and departn of affiliation	tle, nent	Graduate Sch Associate Profe	1001 of Engineering essor,MARUTA ICHIROU					
Target year 3rd y	ear students or above <b>Number</b>	of credi	<b>ts</b> 2	Year	r/semesters	2023/First semester					
Days and periods Mon.	.3 Class style	Lecture	;		Language of instruction	Japanese					
[Overview and purpose of the course]											
Control engineering consists of theory and methodology to design control systems. It includes the classical control theory to design feedback control systems based on transfer functions and frequency response.											
[Course objective	es]										
The goal of this course is to understand the classical control theory and the related methodologies to design eedback control systems based on transfer functions and frequency response.											
[Course schedule	e and contents]										
<ul> <li>2-5. Dynamical syste Basic knowledge o diagrams</li> <li>6-8. Transit response Stability of dynami</li> <li>9-10. Frequency resp Basic knowledge o</li> <li>11-13. Characteristic Performance criteri</li> <li>14-15. Design of feed How to design feed</li> <li>PID control</li> </ul>	ems and transfer functions in dynamical systems, ordir and stability ical systems, transit response on frequency response using of feedback control system ia of feedback control syste dback control system, lback control system using	nary diffe se, stead g Bode p ns ems using phase-le	erential equ y response lots and ve g Nyquist's ead comper	and R and R ctor lo stabil nsation	s, transfer fund outh-Hurwitz ocus ity criteria and , phase-lead-1	tions and block stability criteria d the root locus method. ag compensation and					
[Course requirem	nents]										
Complex function the	eory, Ordinary differential	equation	n theory								
[Evaluation meth	ods and policy]										
Evaluation will be ba concepts and the desi Also, the reports and	ased on the final examination ign theory of feedback syst assignments will be added	on which tems. I up to or	n determine ne third of t	es the c	legree of com	prehension of the basic final examination.					
[Textbooks]											
T. Sugie and M. Fuji Japanese )	Γ. Sugie and M. Fujita <sup>Γ</sup> Introduction to feedback control <sub>□</sub> (Corona Publisher) ISBN:4339033030 (in Japanese)										
				(	 Continue to 制	御工学1(宇) <b>(2)</b>					

## 制御工学1(宇)**(2)**

## [References, etc.]

( Reference books )

Introduced during class

## [Study outside of class (preparation and review)]

To read through textbooks as the lecture progresses. Also, review the parts of the textbook instructed according to the achievement level of the assignments.

## (Other information (office hours, etc.))

Feedback on lecture understanding is made from time to time according to the degree of achievement of the assignments.

										未更新
Course nu	umber	U-ENG	G25 3	5027 LJ71						
Course title (and course title in English)	制御工 Contro	学2(機 l Engineeri	) ng 2			Inst nan and of a	tructor's ne, job tit I departm offiliation	tle, nent	Graduate Scl Professor, AZ Graduate Scl Associate Professo	nool of Informatics ZUMA SHUNICHI nool of Engineering or, ENDO TAKAHIRO
Target yea	<b>r</b> 3rd	year students c	or above	Number	of cred	its	2	Year	/semesters	2023/Second semester
Days and perio	ods Wea	1.3	Class	s style	Lecture	e			Language of instruction	Japanese
[Overview	/ and p	urpose o	f the	course]						
[Course o	bjectiv	ves]								
[Course s	chedu	le and co	ntent	s]						
,1time,										
,2times,										
,2times, 2times										
.1time.										
,2times,										
,2times,										
,2times,										
,1time,										
[Course re	equire	nents]								
None										
[Evaluatio	on met	nods and	polic	>y]						
[Textbook	(s]									
[Referenc	es, etc	-]								
( Referei	nce bo	oks)								
[Study ou	tside c	of class (p	orepa	ration and	d revie	w)]				
			_			_		_		
(Other in	format	ion (offic	e hou	urs, etc.) )						
*Please visi	t KULA	SIS to find	l out a	bout office	hours.					

Course nu	umber	U-EN	G25 35027 LJ71									
Course title (and course title in English)	制御工 <sup>:</sup> Control	学 2 (宇 Engineeri	) ing 2		Inst nan and of a	tructor's ne, job tif I departm offiliation	tle, nent	Graduate Scl Professor,FU	nool of Engineering JJIMOTO KENJI			
Target yea	<b>r</b> 3rd y	ear students of	or above <b>Number</b>	of cred	lits	2	Year	/semesters	2023/Second semester			
Days and perio	ods Thu.2	2	Class style	Lectur	e			Language of instruction	Japanese			
[Overview	verview and purpose of the course]											
This course modeling, ar	This course treats modern control theory based on state-space models of dynamical systems. It includes nodeling, analysis and synthesis methods of feedback control systems.											
[Course o	bjectiv	es]										
Students wil	tudents will learn state-space equations, stability analysis, feedback controller synthesis and observer design.											
[Course se	chedul	e and co	ntents]									
The basic sc 1. Introducti 2. Ordinary of 3. Eigenvalu 4. Solutions 5. Stability 6. Transfer f 7. Controllal 8. Observabi 9. Coordinat 10. Controllal 11. Observal 12. State fee 13. State obs 14. Optimal 15. Summar	hedule c ons different es, eiger of state- functions bility e transfo ability ca bility ca bility ca dback co servers a control a	ial equation vectors a space equation and realic control for control nd output and Kalma	rse is as follows. ons and state-spa nd systems ations zation theory and canonical dea orm rm feedback contro an filters	ce equat	tions	3						
[Course re	equiren	nents]										
Students are preferable to	required take Co	l to take b ontrol Eng	asic knowledge ineering 1.	of linear	algo	ebra and	l differ	ential equation	on theory. I is also			

# 制御工学2(宇)**(2)**

## [Evaluation methods and policy]

The points will be evaluated based on the score of the paper test. The report assignment and attendance point may adds auxiliary points. The goal of this course is to understand the outline of the modern control and to acquire the ability to design the control system.

#### [Textbooks]

Not used

## [References, etc.]

(Reference books)

Introduced during class

## [Study outside of class (preparation and review)]

We will give a report for each unit. Review is necessary after every lecture.

# (Other information (office hours, etc.))

											未更新
Course nu	Imper	r	U-EN	NG25 3:	5030 LJ71						
Course title (and course title in English)	生産 Produ	工学 uctio	<sup>左</sup> (機) on Engi	) neering	;		Inst nan and of a	tructor's ne, job ti I departn Ifiliation	tle, nent	Graduate Scl Professor,IZ	nool of Engineering UI KAZUHIRO
Target yea	<b>r</b> 3	ird yea	ar students	s or above	Number	of cred	lits	2	Year	r/semesters	2023/Second semester
Days and perio	ods W	'ed.2	2	Class	style	Lecture	e			Language of instruction	Japanese
[Overview	and	pur	rpose	of the	course]						
This course	deals	with	1 how to	o constr	uct and op	erate a n	nant	ıfacturii	ng syst	tem of a mech	nanical product.
[Course o	bject	tives	s]								
The goal is t decision-ma	o und king J	lersta probl	and the lems.	concep	t of a manu	ufacturir	1g sy	ystem, a	and to l	become able t	o handle related basic
[Course s	ched	lule	and c	ontent	s]						
Industrial Ec make decision Production a management ,3times, Production S shop schedu Plant Layour Industrial Er analysis, hur ,1time,	ionom ons us .mp C t, MR Sched ling, a t amp 1ginea man-r	nics,2 sing ( )pera (P, JI luling and J ) Lin( ering mach	2times, the con ations M IT, etc. g,2time project e Blanc g,2time nine ana	After ir icept (fo Manager are cov s,Basic schedu cing,2tin s,After alysis, 7	ntroducing or example, ment,2time ered. approache ling are int nes,Basic a introducing Therblig an	the conc , the DC s,Deman s for sin roduced approach g the prin alysis, s	igle hes f ncip tand	of the n ethod fo orecasti machine for plan les of n ard time	nanufa or inve ng, pro e scheo t layou notion e settir	ecturing cost a estment decisi oduction plan duling, flow s at and line bal economy, the ng, etc. are ad	and cash flow, how to ons) is addressed. ning, inventory hop scheduling, job ancing are introduced. approaches for process dressed.
[Course re	quir	eme	ents]								
		. (		d a a lia			_				
	n me	etno	as an		; <b>y]</b>	1		. 1	• ,		
The regular	exam	inati	.on, 1n-0	class ex	aminations	and rep	orts	are tak	en into	account.	
[Textbook	sj										
Not used											
[Reference	es, e	tc.]									
(Referer	ice b	ook	( <b>s</b> )								
[Study out	tside	of (	class	(prepa	ration and	d revie	w)]				
Homework <sub>I</sub>	proble	ems a	are assi	igned.							
(Other inf	iorm	atio	n (offi	ce hou	irs, etc.) )	)					
The topics c	overe	d ma	ay be m	nodified	from the r	plan acco	ordii	ng to the	e actua	ıl schedule.	

Course nu	umber	U-ENC	325 35	5035 LJ75								
Course title (and course title in English)	Course title (and course title in English)       結晶物性学(材エネ)       Instructor's name, job title, and department of affiliation       Graduate School of Engineering Professor,INUI HARUYUKI Graduate School of Engineering Associate Professor,KISHIDA KIYOUSUKE											
Target yea	<b>r</b> 3rd y	ear students of	r above	Number	of cred	its	2	Year	/semesters	2023/First semester		
Days and perio	ods Fri.1		Class	style	Lecture	e	· · · · ·	-	Language of instruction	Japanese		
[Overview and purpose of the course]												
Dislocations are the most important lattice defects that strongly affect various propieties, especially mechanical properties of crystalline materials. In this course, fundamental properties of dislocations as well as basics of elasticity will be lectured.												
[Course o	bjective	es]										
This class aims to help students to acquire fundamental understandings of dislocations and also to acquire ways to understand mechanical properties of crystalline materials based on dislocation theory.												
[Course s	chedule	e and cor	ntents	s]								
(1) Introduct	tion to di	islocations	[1 we	ek]:								
(2) Basics of	f elastici	ty theory [	5 weel	ks]								
(3) Elastic p	roperties	of disloca	tions	[2 weeks]								
(4) Wottom ( $(5)$ ) Force on	dislocat	ions [2 w	eksl									
(6) Feedbacl	k [1 wee	ks]	-									
[Course re	auiren	ontsl										
None	squiren	lentaj										
[Evaluatio	on meth	ods and	polic	y]								
Evaluation v	vill be ba	ased on on	e (or t	wo) writte	n exami	nati	on(s). A	ttenda	nce and daily	reports may be		
	n graum	g determin	ation.									
[Textbook	s]											
Hand out ma	aterials v	vill be prov	vided of	during the	lecture.							
[Referenc	es, etc.	]										
(Reference books) 鈴木秀次『転位論入門』(アグネ)ISBN:4750702315 J.P. Hirth and J. Lothe 『Theory of Dislocations』(McGraw-Hill)ISBN:TY86299777 J.P. Hirth and J. Lothe 『Theory of Dislocations, 2nd ed.』(Wiley)ISBN:047109125 P.M. Anderson, J.P. Hirth and J. Lothe 『Theory of Dislocations, 3rd ed.』(Cambridge University Press, 2017)ISBN:0521864364 幸田成康『金属物理学序論』(コロナ)ISBN:9784339042870												
								C	Jontinue to 祜旨	■初性子(M⊥ <i>不)(2)</i>		

# 結晶物性学(材エネ)(2)

# 柴田俊忍[ほか]共著『材料力学の基礎』(培風館)ISBN:4563034657

# [Study outside of class (preparation and review)]

To review contents covered in the previous lecture.

# (Other information (office hours, etc.))

Course nu	Course number         U-ENG25 35036 LJ62         U-ENG25 35036 LJ75         U-ENG25 35036 LJ76										
Course title (and course title in English)	se title course sh) 材料物理化学(原) Physical Chemistry of Materials sh)										
Target yea	<b>r</b> 3	ord yea	ar students	or above	Number	of cred	its	2	Year	/semesters	2023/Second semester
Days and perio	ods W	ed.2	2	Class	s style	Lecture	e			Language of instruction	Japanese
[Overview and purpose of the course]											
This course deals with physicochemical information on nuclear energy materials such as production of fuel and soundness of materials, examining their principles and practical examples.											
[Course objectives]											
Course objective: By the end of the course, students will have knowledge of fission reactors and nuclear Susion reactors in terms of physical chemistry, for instance, thermodynamics, reaction velocity, and mass ransfer.											
[Course s	ched	lule	and co	ontent	s]						
Provide an or refinement of spent fuel, tr (2) Isotope s Explain the p work units, of (3) Reaction Provide an of determination (4) Soundne Outline the s influence of strategies for (5) Nuclear Explain the p well as the r (6) Materials Discuss the p material proj (7) Oxides a Explain the b diagrams. (8) Confirma	overvi of nuc reatmo epara princi enrich kinet overvi on met ss of t structur radiar r deal fusior structur adioad s and radiat pertie nd nu behav	ew ( lear ent a tion iples mer tics, ew ( thod nucl tion ing y n rea ure ( ctior ctiva radii ion ( s an iclea vior ( discu	of nucle fuel res and disp and em (gaseo) nt casca 2 classe of therm ls, along lear reac of nucle damage with the actor fue of nucle n and pe ation of ation, 2 effect as d radiat ur fuel, 2 of nucle	ar ener sources oosal of richmer us diffu de) of i es nodyna: g with t ctor ma ar reac e and co ese phe el and n ear fusio ermeati structu classes s a prob ion. 2 classe ar fuel attainm nd revi	gy material , production radioactive nt, 2 classes usion processo sotopes suc mics and re he influence terials, 2 cl tors from the prosion on nomena. naterials, 3 on reactors on leakage ral materials olem communations and fission nent, 1 class ew of exam	Is and the n and bug e waste) s ss, centrich as ura- taction k e of tem asses ne perspe- the sou classes from the of the h l. non to all produc sinination	e va irnin ifug iniu inet pera ectiv ndno e pe ydro l nuo ts in que	arious stang of nuc gal separ m. ics and a ture. ves of m ess of m rspectiv ogen iso clear end reactor	eps of clear f ation p explain aterial aterial aterial es of r topes f ergy m s using	the nuclear fu uel, storage an process) and r n order of read s and cross-se s, as well as t naterials and e hat fuel nucle naterials and e g oxygen pote ASIS.	el cycle (mining and nd reprocessing of nethods (separative ction and rate constant ections and explain the he causes of and cross-sections and ear fusion reactors, as xplain the influence of ntial and phase
									_0	Continue to 材	料物理化学(原) <b>(2)</b>

## 材料物理化学(原)**(2)**

## [Course requirements]

None

## [Evaluation methods and policy]

[Grading method] Grade is based on one written examination. [Grading criterion] Must score 60 or above out of 100 on the written examination 60 or above: pass 59 or below: fail

#### [Textbooks]

Others. No additional materials will be distributed in class.

#### [References, etc.]

#### ( Reference books )

M. Benedict, T. H. Pigford and H. W. Levi 『Nuclear Chemical Engineering, 2nd Ed.』 (McGraw-Hill) ISBN:0070045313, Atkins 『アトキンス物理化学 第10版』 (東京化学同人) ISBN:9784807909087

#### [Study outside of class (preparation and review)]

As needed, practice exercises will be conducted in class. Therefore, please go over what you learned after each class.

#### (Other information (office hours, etc.))

Lecture is given in Japanese.

\*Please visit KULASIS to find out about office hours.

#### [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

(3) Details of practical classes delivered based on instructors ' practical work experience

Course nu	umber	U-E	ENG25 3	5036 LJ62	U-EN	G25	5 35036	LJ75	U-ENG25 3	5036 LJ76			
Course title (and course title in English)	材料物 Physic	]理化学 al Chem	:(エネ) iistry of I	) Materials		Inst nan and of a	tructor's ne, job ti I departn affiliation	tle, nent	Graduate Scl Professor,HI	1001 of Energy Science RATO TETSUJI			
Target yea	<b>r</b> 3rd	year studer	nts or above	Number	of cred	lits	2	Year	/semesters	2023/Second semester			
Days and perio	ods Wea	1.2	Class	s style	Lectur	e	•		Language of instruction	Japanese			
[Overview and purpose of the course]													
This course discusses physical chemistry in relation to materials and raw materials processing. To do so, lectures focus on thermodynamics, solution chemistry, electrochemistry, the sciences that serve as the basis for material production, functional materials processes, recycling, corrosion and corrosion protection, etc.													
[Course objectives]													
From this co 1. Thermody utilizing the 2. Depict log 3. Read log 4. Express si constant from 5. Determine 6. Consider 7. Consider 8. Consider	<ul> <li>From this course, students will become able to do the following:</li> <li>1. Thermodynamically estimate aqueous solution reactions (acid-base reaction, oxygen reduction reaction) utilizing the free energy of ion formation.</li> <li>2. Depict log a-pH diagrams and phase-pH diagrams.</li> <li>3. Read log a-pH diagrams and phase-pH diagrams.</li> <li>4. Express simple reaction rate equations in differential and integral form, and determine the reaction rate constant from experiment results.</li> <li>5. Determine activation energy in relation to reaction rate temperature dependence from an Arrhenius plot.</li> <li>6. Consider electrode kinetics using the Butler-Volmer equation.</li> <li>7. Consider corrosion in light of equilibrium theory (Potential-pH diagram).</li> <li>8. Consider corrosion in light of kinetic theory (Evans diagram, mixed potential model).</li> </ul>												
[Course s	chedu	le and	content	s]									
Fundamenta Confirmatio will serve as	ls of ch n is ma the fou	emical t de of the indation	thermody basic it for this	rnamics (2 ems of Gib course.	classes) bs energ	gy, c	hemical	poten	tial and activi	ity, etc., all of which			
Equilibrium Lectures dis serve as the prevention.	theory cuss act foundat	of aqueo id-base i ion for i	ous solut reactions materials	ion reactio , oxidation processes	ns (6 cla -reductio using ac	isses on re queo	s) eactions ous solut	, and e ions a	equilibrium el nd for corrosi	ectrochemistry, which on and corrosion			
Reaction rat Explanation serve as the prevention.	Reaction rate fundamentals (3 classes) Explanation is made of chemical reaction rate, dynamic electrochemistry, and solid surface processes, which serve as the foundation for materials processes using aqueous solutions and for corrosion and corrosion prevention.												
Corrosion (3 Lectures wil	3 classes 1 discus	s) ss equili	brium the	eory and ki	inetics of	f me	etal corre	osion.					
Feedback cl	ass (1 c	lass)											
								(	Continue to 材料	料物理化学(エネ) <b>(2)</b>			

## 材料物理化学(エネ)**(2)**

Via questions and answer using the study support service (PandA), students will gain a deeper understanding of the contents of this course.

#### [Course requirements]

Students are recommended to have finished the course Energy and Material Thermochemistry I.

#### [Evaluation methods and policy]

Grading will be performed in principle using scores on regular tests. Consideration may also be given to exercises, quizzes, and reports assigned in classes.

#### [Textbooks]

Materials will be distributed during class or using the student support service (PandA).

#### [References, etc.]

(Reference books) 『アトキンス物理化学』(東京化学同人)

#### [Study outside of class (preparation and review)]

Notification will be made via the study support service (PandA).

For each week 's class, class contents and quiz answers will be posted on the study support service (PandA). Students are requested to review and gain a sufficient understanding of these before each next class period.

#### (Other information (office hours, etc.))

Problem-solving type assignments will be designated as necessary using practice exercises as well as the study support service (PandA).

This lecture may be changed to the on-demand via PandA on account of the speaker.

Please note also that a portion of course contents may be omitted, or additional content may be added, depending on the progress of the course during each specific academic year.

									未更新
Course nu	umber	U-EN	G25 35037 LJ57	U-EN	G25	35037	LJ75		
Course title (and course title in English)	熱及び <sup>!</sup> Heat and	物質移動 d Mass T	」(材) Transfer		Inst nan and of a	ructor's ne, job ti I departn Iffiliation	tle, nent	Graduate Sch Professor,HI	nool of Engineering DEYUKI YASUDA
Target yea	<b>r</b> 3rd y	ear students	or above <b>Number</b>	of cred	its	2	Year	r/semesters	2023/First semester
Days and peric	ods Wed	.2	Class style	Lectur	e			Language of instruction	Japanese
[Overview	and pu	rpose o	of the course]						
The fundame are given.	entals of	transport	t phenomena for t	he engii	ieers	s and/or	resea	rchers related	to physical engineering
[Course o	bjectiv	es]							
To be able to phenomena.	o apply t	he fundai	mental equations	of therm	nal a	nd mass	s transj	port studied in	the class to real
[Course se	chedul	e and co	ontents]						
mass, and m Non-steady l numerical m Conservation Molecular ki Heat conduc 2 dimension Green functi Hydrodynan Boundary la Electromagn Achievemen	omentur heat tran ethod. n rules,1 inetics,1 tion of c al heat c on,2time nics,2tim yer,1tim letic radi t check,	n transfer sfer,2tim time,Fou time,Max ylinder a onduction es,Green nes,Navie e, iation,1tin 1time,Lea	rs. Fourier#039s 1 rs. Fourier#039s 1 es,Diffusion equa rier#039s 1aw, Ste well#039s theorr nd sphere,1time,F n,1time,2 dimensi function. Relation or Stokes equation me, arning how to solv	aw, Stea aw, Stea tion, so eady hea Heat trar onal La betwee	idy f lved it co isfer plac en So	neat con by Fou nductio of cylin e equati chroedin	nduction rier ex n. ndrical on. nger ec	pansion, Lapl and sperical quation and di	ace transform, and coordinates. ffusion equation.
[Course re	equiren	nents]							
None									
[Evaluatio	n meth	ods and	d policy]						
Assignment	and writ	ten exam	ination						

## 熱及び物質移動(材)**(2)**

#### [Textbooks]

河合著 『物理工学・化学工学を学ぶための熱・物質移動の基礎』(丸善,2005) ISBN:4621076086 河合著:「物理工学・化学工学を学ぶための熱・物質移動の基礎」丸善(2005) isbn{}{4621076086}

# [References, etc.]

(Reference books)

(Related URLs)

((50370) http://www.process.mtl.kyoto-u.ac.jp/)

## [Study outside of class (preparation and review)]

The homework will be announced in the lecture.

#### (Other information (office hours, etc.))

										未更新
Course nu	umbe	r U-EN	G25 3	5037 LJ57	U-EN	G25	5 35037	LJ75		
Course title (and course title in English)	熱及 Hea	び物質移動 t and Mass Tr	(エネ ansfer	<b>ጙ</b> )		Inst nan and of a	tructor's ne, job ti I departn offiliation	tle, nent	Graduate Sch Associate Profes Graduate Sch Professor,SA	nool of Energy Science ssor,OKUMURA HIDEYUKI nool of Energy Science GAWA TAKASHI
Target yea	r	3rd year students c	or above	Number	of cred	its	2	Year	/semesters	2023/First semester
Days and perio	ods N	1on.2	Class	s style	Lecture	e			Language of instruction	Japanese
[Overview	anc	l purpose o	f the	course]						
[Course o	bjec	tives]								
[Course s	che	dule and co	ntent	s]						
,2times, ,2times, ,3times, ,2times, ,2times, ,3times, ,1time,										
[Course re	equi	rements]								
None										
[Evaluatio	n m	ethods and	polic	>y]						
[Textbook	s]									
[Referenc	es, e	etc.]								
( Referei	nce	books)								
[Study ou	tsid	e of class (p	orepa	ration and	d revie	w)]				
(Other in	form	nation (offic	e hou	urs, etc.) )	)					
*Please visit	t KU	LASIS to find	l out a	bout office	hours.					

Course nu	umbe	er	U-EI	NG25 (	35040 LJ52	2 U-EN	[G25	5 35040	LJ59	U-ENG25 3	5040 LJ77		
Course title (and course title in English)	Course title and course itle in English) Course title in Plasma Physics Course (原宇) Plasma Physics Craduate School of Engineering Professor,MURAKAMI SADAYOSHI of affiliation												
Target yea	r	3rd ye	ar student	s or abov	e Numbe	r of crec	lits	2	Year	r/semesters	2023/Second semester		
Days and perio	ods T	ue.2		Clas	ss style	Lectur	e			Language of instruction	Japanese		
[Overview	and	d pu	rpose	of the	e course]								
Fundamenta plasma, mag	l pro gneto	perti hydr	es of pl odynan	lasma a nics, pi	as a univer lasma wav	sal state or sal state or sal state or sand tra	of hi Insp	gh-temp ort phen	oratur omena	e matters, bas a are explained	ic equation describing 1.		
[Course o	bjec	tive	s]										
to understan	d bas	sic pi	ropertie	es of pl	asmas and	learn fur	ıdan	nental m	ethod	of analysis			
[Course s	che	dule	and c	onter	its]								
Coulomb co Basic equati Equilibrium Plasma wave Wave-partic Transport ph Gas discharg Nuclear fusi Confirmatio	Aotion of charged particles,2times, Coulomb collision,1time, Basic equations,2times, Equilibrium and stability,1time, Plasma waves,2times, Wave-particle interaction,1time, Fransport phenomena,1time, Gas discharge,1time, Nuclear fusion,1time, Confirmation of achievement 1time												
[Course re	equi	rem	ents]										
- Basic knowl	edge	es of	electro	magne	tism, statis	tical phys	sics,	fluid dy	namic	s and atomic	physics are expected.		
[Evaluatio	n m	etho	ods an	d poli	icy]								
semester-end	d exa	mina	ation ar	nd repo	orts								
[Textbook	s]												
Hand out wi	ll be	distr	ributed	•									
[Reference	es, e	etc.]											
( <b>Referer</b> Introduced d	n <b>ce</b>   luring	<b>boo</b> l g cla	<b>ks</b> ) ss										
[Study out	tsid	e of	class	(prep	aration a	nd revie	w)]						
Please read a	and s	study	the ha	ndouts	in advance	e about th	ie co	ontents o	of the d	lay's class.			
(Other in	form	natio	on (offi	ice ho	ours, etc.)	)							
*Please visit	t KU	LAS	IS to fi	nd out	about offic	ce hours.							

										未更新
Course nu	umbe	r U-EN	G25 3:	5041 LJ52	U-EN	G25	5 35041	LJ53		
Course title (and course title in English)	量子 Fund	-反応基礎論 lamentals of	i(原〕 Particl	) le Interactic	ons	Inst nan and of a	tructor's ne, job tit I departm affiliation	tle, nent	Graduate Sch Professor,SA	nool of Engineering ITOU MANABU
Target yea	r	3rd year students	or above	Number	of cred	lits	2	Year	/semesters	2023/Second semester
Days and perio	ods F	ri.3	Class	s style	Lecture	e			Language of instruction	Japanese
[Overview	anc	l purpose o	of the	course]						
[Course o	bjec	tives]								
[Course s	cheo	dule and co	ontent	:s]						
,2times, ,4times, ,2times, ,2times, ,2times, ,2times, , 1 times,										
[Course re	equi	rements]								
None										
[Evaluatio	on m	ethods and	l polic	;y]						
[Textbook	(s]									
[Referenc	es, e	etc.]								
( Referei	nce l	books)								
[Study ou	tside	e of class (	prepa	ration and	d revie	w)]				
(Other in	form	ation (offic	e hou	urs, etc.) )						
*Please visit	t KU	LASIS to fin	d out a	bout office	hours.					

Course nu	ımbe	er	U-E	NG25	3504	45 LJ52	U-EN	G25	35045	LJ77		
Course title (and course title in English)	気体 Gase	、力当 lyna	学(宇 mics	)				Inst nan and of a	ructor's ne, job tit I departm iffiliation	tle, nent	Graduate Sch Professor,TA	nool of Engineering KATA SHIGERU
Target yea	r	3rd ye	ar studen	ts or ab	ove <b>N</b>	umber	of cred	lits	2	Year	r/semesters	2023/First semester
Days and perio	ods T	ue.2		Cla	ISS S	tyle	Lectur	e			Language of instruction	Japanese
<b>Overview and purpose of the course]</b> Dynamics of high speed gas flows is treated on the basis of the fluid dynamics for compressible inviscid fluid. In this course, one-dimensional and quasi one-dimensional flows are mainly discussed, in order to show ypical phenomena coming from the fluid compressibility.												
[Course o	[Course objectives]											
To learn/unc	Course objectives											
[Course s	cheo	dule	and	conte	nts]							
<ol> <li>Sound pro</li> <li>Quasi one</li> <li>Propagation</li> <li>Standing Standing Standing</li></ol>	<ul> <li>Euler set of equations (2-3 times)</li> <li>Sound propagation (2 times) propagation of infinitesimal disturbance</li> <li>Quasi one-dimension flow (2-3 times) isentropic flow, Laval nozzle, etc.</li> <li>Propagation of finite amplitude disturbance (2-3 times) wave deformation, Riemann invariants, etc.</li> <li>Standing Shock wave (1-2 times) Rankine-Hugoniot relation, etc.</li> <li>Shock tube problem (2 time) Riemann problem, Reflection and deflection of waves</li> </ul>											
<b>[Course re</b>			entsj	1 Colo	<u>11100</u>		T) Lina	or A	laobro (	<b>A D</b> )		
Fluid dynan		, ER	ementa		uius (	(A,D, I,I	1), Line	al A	igeora (	А,D)		
[Evaluatio	n m	etho	ods ar	nd po	licy]							
By the final	exan	1., in	princi	ple.								
[Textbook	s]											
H. M. Liepn	nann	and	A. Ros	shko	<sup>₽</sup> Eleı	ments of	f Gasdyı	nami	cs』(1	Dover	Publications )	) ISBN:0486419630
[Referenc	es, e	etc.]										
( <b>Referer</b> J. D. Anders	(Reference books) J. D. Anderson, Jr. <sup>®</sup> Modern Compressible Flow (2nd ed.) <sup>』</sup> (McGraw-Hill) ISBN:0071006656											
[Study ou	tside	e of	class	(pre	parat	tion an	d revie	w)]				
Students are	Students are expected to read the textbook by themselves in accordance with the progress of the class.											
( Other in	form	natic	on (off	ice h	ours	s, etc.)	)					
Actual times	and	orde	er of to	pics n	nay cl	hange, d	lependin	g or	the cla	ss atte	ndants or othe	er reasons.

					未更新	
Course number	U-ENG25 3	5046 LJ52 U-E	NG25 35046	LJ77		
Course title (and course title in English) A 如何的问题,我的问题,我的问题,我的问题。 和你的问题,我的问题,我的问题,我的问题。 和你的问题,我的问题,我们的问题。 和你的问题,我们的问题。 和你的问题,我们的问题。 和你的问题,我们的问题。 和你的问题。				Instructor's name, job title, and department of affiliation Graduate School of Engineering Professor,ERIGUCHI KOUJI		
Target year 3rd y	ear students or above	Number of cre	dits 2	Year/semesters	2023/First semester	
Days and periods Thu.	1 Clas	s style Lectu	ire	Language of instruction	I Japanese	
[Overview and purpose of the course]						
[Course objectives]						
[Course schedule and contents]						
, 2 times,						
, 4 times,						
, 3 times,						
, 2 times, A times						
, 4 umes,						
[Course requirements]						
None						
[Evaluation methods and policy]						
[Textbooks]						
[References, etc.]						
( Reference books )						
				Continue to	热新力学(宇) <b>(2)</b>	
# 熱統計力学(宇)**(2)**

# [Study outside of class (preparation and review)]

(Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

## [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

Course numb	ber	U-ENO	G25 35	047 LJ52	U-EN	G25	35047	LJ77			
Course title (and course title in English)	気力 rodyn	学(宇) namics				Inst nan and of a	ructor's ne, job tit I departm Iffiliation	ile, ient	Graduate Scl Professor,TA	hool of Engineering AKATA SHIGERU	
Target year	3rd ye	ear students o	or above	Number	of cred	lits	2	Yea	r/semesters	2023/Second semester	
Days and periods	Fri.2		Class	style	Lectur	e			Language of instruction	Japanese	
[Overview and purpose of the course]											
This is the continuation of the class "Gasdynamics (50450)." Mainly treated are two-dimensional inviscid compressible fluid flows and aerodynamic forces acting on the bodies in such flows. A modern approach to gas flows based on the kinetic theory of gases is introduced as well.											
[Course obje	ctive	es]									
To learn/ unders flight.	stand	the funda	mental	l issues of	two-din	nens	ional co	mpres	ssible gas flov	vs related to high speed	
[Course sche	edule	and co	ntents	s]							
<ol> <li>ShockExpa</li> <li>Non-isentrop etc.</li> <li>Small perturb</li> <li>Steady two-d</li> <li>Kinetic theor</li> </ol>	nsion ic flo pation imens y of g	wave the w and Mr theory (3 sional flow gases (2-3	ory and occo's times w and times)	d Interacti theorem ( ) Potent the method ) velocit	on of ob 1-2 time ial flow d of char y distrib	oliqu es) , Sin racte outio	e shock - Bow sh nilarity p eristics ( n function	s (2 tin nock, 5 rules, - 3-4 tin on, Bo	mes) ShockExpar etc. mes) oltzmann equa	nsion wave interaction,	
[Course requ	iirem	ents]									
Fluid dynamics	1,2, 0	Gasdynam	nics, El	lemental C	Calculus	(A,I	B, I,II), I	Linea	r Algebra (A,l	B)	
[Evaluation n	neth	ods and	polic	у]							
By the final exa	ım., ir	n principle	2.								
[Textbooks]											
H. M. Liepman	n and	A. Roshk	to <sup>┏</sup> Ε	lements of	Gasdyr	nami	cs』(1	Dover	Publications	) ISBN:0486419630	
[References,	etc.]										
( <b>Reference books</b> ) J. D. Anderson, Jr. 『Modern Compressible Flow (2nd ed.)』 (McGraw-Hill) ISBN:0071006656											
[Study outsid	[Study outside of class (preparation and review)]										
Students are exp	pected	d to read t	he text	tbook by tl	hemselv	es ir	n accord	ance v	with the progr	ress of the class.	
( Other infor	matio	on (office	e hou	rs, etc.) )	)						
Actual times an	d ord	er of topic	cs may	change, d	ependin	g or	the cla	ss atte	endants or othe	er reasons.	

Course nu	mber	U-EN	G25 3	5048 LJ77						
Course title (and course title in English)	推進基 Fundan	」 礎論(宇 nentals of	) Aeros	pace Propu	lsion	Ins nar and of a	tructor's ne, job tit departm affiliation	ile, nent	Graduate Scl Professor,EF	nool of Engineering RIGUCHI KOUJI
Target year	• 3rd y	vear students of	or above	Number	of cred	lits	2	Year	/semesters	2023/Second semester
Days and perio	<b>ds</b> Mon	.1	Clas	s style	Lectur	e			Language of instruction	Japanese
[Overview	and p	urpose o	of the	course]						
[Course of	bjectiv	es]								
[Course so	chedul	e and co	nten	ts]						
Ionized Gase Electromagn Equation of I Atomic and I Diffusion and Ionized Gase Electric Prop ,1time,	es,1time etics,2ti lonized Molecul d Trans es near S pulsion,	, Gases, 1 tin lar Collisi port of Ion Solid Surfa I time,	me, ons,2t nized ( aces,2	imes, Gases,1time times,	2,					
[Course re	quiren	nents]								
Fluid Dynam	nics, Ga	s Dynami	cs, Th	ermodynam	nics, Ele	ectro	omagneti	cs		
[Evaluatio	n meth	ods and	polie	cy]						
[Textbook	s]									
[Reference	es, etc.	]								
( <b>Referen</b> R.W. Humbl York, 1995)	e, G.N.	oks ) Henry, ar	nd W.J	Larson, S	pace Pro	opul	sion An	alysis a	and Design (I	McGraw-Hill, New
G.r. Sutton 2	uiu (), f	DIDIALZ, RO	JCKet	FIOPUISION	Elemen	<u>us</u> , 8	<u>om ea. (</u> J	C	ney amp Sor continue to 推	is, <u>HODOKEN, 2010)</u> 進基礎論(宇) <b>(2)</b>

推進基礎論(宇)**(2)** 

isbn{}{9780470080245};

G.P. Sutton and O. Biblarz, Rocket Propulsion Elements, 7th ed. (Wiley, New York, 2001) isbn{}{ 0471326429};

M. Mitchner and Ch.H. Kruger, Jr., Partially Ionized Gases (Wiley, New York, 1973) isbn{}{0471611727}; F.F. Chen, Introduction to Plasma Physics and Controlled Fusion, 3rd ed. (Springer International Publishing Switzerland, Cham, 2016) isbn{}{9783319223087};

F.F. Chen, Introduction to Plasma Physics and Controlled Fusion, Vol. 1, Plasma Physics, 2nd ed. (Plenum, New York, 1984) isbn{}{9780306413322};

L.M. Biberman, V.S. Vorobev, and I.T. Yakubov, Kinetics of Nonequilibrium Low-Temperature Plasmas (Consultants Bureau, New York, 1987);

R.O. Dendy ed., Plasma Physics: An Introductory Course (Cambridge University Press, London, 1993) isbn{} {0521433096}, (同, 1995) isbn{} {0521484529};

M.A. Lieberman and A.J. Lichtenberg, Principles of Plasma Discharges and Materials Processing (Wiley-Interscience, Hoboken, 2005) isbn{}{0471720011}.

### [Study outside of class (preparation and review)]

(Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

### [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

									未更新
Course nu	umber	U-EN	G25 35049 LJ77						
Course title (and course title in English)	航空宇 Flight D	宙機力学 Dynamics	(宇) of Aerospace Veł	nicle	Inst nan and of a	tructor's ne, job tit I departm Ifiliation	tle, nent	Graduate Scl Professor,SE	nool of Engineering NDA KEI
Target yea	<b>r</b> 3rd y	vear students of	or above <b>Number</b>	of cred	lits	2	Year	/semesters	2023/Second semester
Days and perio	ods Mon	.2	Class style	Lecture	e			Language of instruction	Japanese
[Overview	and p	urpose o	f the course]						
Flight dynar	nics of a	erospace	vehicles.						
[Course o	bjectiv	es]							
- To understa	nd analy	tical mech	anics through flig	ght dyna	amic	es of aer	ospace	e vehicles.	
[Course s	chedul	e and co	ntents]						
<ul> <li>introductio</li> <li>coordinates</li> <li>principle o</li> <li>d'Alembert</li> <li>potential</li> <li>Lagrange e</li> <li>conservatio</li> <li>Lagrange r</li> <li>Euler-Lagr</li> <li>Rigid body I</li> <li>Euler angle</li> <li>angular rat</li> <li>pseudo coor</li> <li>Rigid body o</li> <li>kinetic ene</li> <li>linear and s</li> <li>inertia tenss</li> <li>Euler equa</li> <li>Dynamics of</li> <li>topics of at</li> <li>Achievemen</li> <li>achieveme</li> </ul>	n s f virtual t princip equation on law nultiplie ange equ cinemati es e ordinates dynamic rgy of ri angular tion of n f space v titude dy at confirm	work le of motion r uation cs, 3 time s, 3 times gid body momentur notion vehicle, 2 t ynamics o mation, 1 t rmation to	s n times f space vehicles time check up level of	funders	tand	ling			
[Course re	equiren	nents]							
Foundation	of mech:	anics and t	mathematics				(	 Continue to 航空	至宇宙機力学(宇)(2)

# [Evaluation methods and policy]

Evaluation depends on marks of examination and exercises.

### [Textbooks]

Instructed during class

### [References, etc.]

### (Reference books)

L. D. Landau and E. M. Lifshitz <sup>®</sup>Mechanics, Volume 1 (Course of Theoretical Physics) <sup>①</sup> (Elsevier) ISBN:0750628960 Herbert Goldstein <sup>®</sup>Classical Mechanics <sup>②</sup> (Addison-Wesley) ISBN:0201657023 (international ed. ISBN 0321188977)

Koide <sup>II</sup> Introductory course of physics 2 Analytical Mechanics (Iwanami Shoten ) ISBN:4000076426 ( in Japanese )

Wadachi <sup>®</sup>Introductory course of physics 10 Mathematics for physics <sup>a</sup> (Iwanami Shoten ) ISBN: 4000076507 (in Japanese)

## [Study outside of class (preparation and review)]

Learn the basic mechanics and mathematics for analytical mechanics.

## (Other information (office hours, etc.))

Course number	U-EN	G25 35051 LJ71									
Course title (and course 固体プ title in Mecha English)	]学(宇) mics of Sol	lids		Instructor's name, job title, and department of affiliation			Graduate School of Engineering Professor,BIWA SHIRO				
Target year 3rd	year students	or above Number	of cred	lits	2	Year	/semesters	2023/First semester			
Days and periods Mo	n.1	Class style	Lecture	e			Language of instruction	Japanese			
[Overview and	ourpose c	of the course]									
"Mechanics of Mat with in this course. of stress and strain mathematical analy understanding of b systems.	<b>[Overview and purpose of the course]</b> While the methods of stress-strain analysis for elementary structural members are the main topics in the "Mechanics of Materials" courses, more general physical laws of the mechanical behavior of solids are dealt with in this course. Namely, fundamental principles of solid mechanics such as three-dimensional expressions of stress and strain, equilibrium equations, constitutive equations (Hooke's law) are treated together with mathematical analysis of static deformations in elastic bodies. These subjects are important for the understanding of basic principles of large-scale computational analysis of various mechanical/structural systems.										
[Course objecti	ves]										
This course aims to of deformation ana approximate theori	establish t lysis of sol es given in	the understanding ids and structures the "Mechanics	g of rigor s. It is als of Mater	rous so th ials"	express e aim o course	ions o f this c s from	f stress and st course to re-e a rigorous vi	rain and fundamentals xamine the values of ewpoint.			
[Course schedu	le and co	ontents]									
The following topic situations. Week 1 [Prelimina Weeks 2-3 [Deform Infinitesimal strain Weeks 4-6 [Stress of stress component Week 7-8 [Stress-s Weeks 9-10 [Funds Compatibility relat Weeks 11-13 [Two equation; Stress funds of torsion; Stress funds of torsion; Stress funds Weeks 14 [Princip] potential energy Week 15 [Final examples Week 16 [Feedbact]	cs are discu ries] Basis nation and s ; Transform and laws of ts; Cauchy train relation ts; Cauchy train relation amental equ ion for stra -dimension nction for stra -dimension nction for e of virtual amination/I s	vecotrs; Kroneck strain] Description nation of strain con- f motion] Stress w 's laws of motion ons] Hooke's law uations of elastic in nal problems of elastic in plar coordinates; torsion; Torsion I work] Virtual d earning achieven	res, but s cer's delta on of mo omponer vector, E i; Equilib ; Elastic ity] Navi lastic de Stress co of bars o isplacem	subje a; Al tion; nts; F orium mod ier's o form oncer of this nent; luatio	ct to po ternatin Materi Principa s laws o n equati uli; Voi equation ations] ntration n-walle Princip	ssible ag sym al time l strair of moti ons; P igt exp ns; Pla Airy's around d cross le of v	change accor bol; Summat e derivative; G is fon; Cauchy's rincipal stress pression ine stress and stress function d a circular h s-sections irtual work; H	ding to each year's ion convention Green-Lagrange strain; law; Transformation ses and stress invariants plane strain; on; Biharmonic ole; St. Venant's theory Principle of stationary			

# 固体力学(宇)**(2)**

## [Course requirements]

The enrolling students are expected to have knowledge in the Mechanics of Materials courses. Good understanding of calculus, linear algebra (eigenvalue problems) and vector analysis is also necessary.

### [Evaluation methods and policy]

Grading is made based on the examination (80%) and the reports (20%). The total score of the examination and the reports is evaluated between 0 and 100 points (the pass mark is 60). Occasional changes of grading criteria will be announced in the class.

### [Textbooks]

Textbooks are not assigned. The lecture is given in the blackboard style.

### [References, etc.]

### (Reference books)

T. Inoue, "Fundamentals of elasticity" (Nikkan Kogyo)

S. Kobayashi and K. Kondo, "Elasticity" (Baihu-kan)

For references written in English, students are advised to contact the instructor directly.

### [Study outside of class (preparation and review)]

Contents of "Mechanics of Materials" courses should be fully reviewed. Homeworks (reports) will be assigned to review the lectures.

### (Other information (office hours, etc.))

Lectures are given in a black-board style. Students are expected to take the notes to understand the ideas and mathematical derivations, and make questions regarding unclear points.

						未更新
Course number	U-ENG25 3	5054 SJ71 U-E	ENG25 3:	5054 SJ7	7	
Course title (and course 物理工 title in Exercise English)	学演習1(エ <sup>ス</sup> e on Engineerin	ネ) g Science 1	Instrue name, and de of affil	ctor's job title, partment iation	Graduate Sch Professor,SU	ool of Energy Science MIGAWA TAKASHI
Target year 3rd y	ear students or above	Number of cr	edits 1	Y	ear/semesters	2023/First semester
Days and periods Mon.	.4 Class	s style Sem	inar		Language of instruction	Japanese
[Overview and pu	Irpose of the	course]				
[Course objective	es]					
[Course schedule	e and conten	ts]				
,9times,						
,oumes,						
[Course requirem	nentsl					
None						
[Evaluation meth	ods and polic	cy]				
[Textbooks]						
[References, etc.]	]					
(Reference boo	oks)					
					Continue to 物理	 工学演習1(エネ) <b>(2)</b>

物理工学演習1(エネ)(2)

# [Study outside of class (preparation and review)]

(Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

## [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

Course nu	mber	U-EN	G25 3:	5054 SJ71	U-EN	G25	5 35054	SJ77		
Course title (and course title in English)物理工学演習1(原)Instructor's name, job title, and department of affiliationGraduate School of Engineer Assistant Professor,OGURE K Graduate School of Engineer Professor,MIYADERA TAK										hool of Engineering fessor,OGURE KENZOU hool of Engineering IYADERA TAKAYUKI
Target year	• 3rd	year students	or above	Number o	of cred	lits	1	Yea	r/semesters	2023/First semester
Days and perio	<b>ds</b> Tue	3,4	Class	s style	Semin	ar			Language of instruction	Japanese
[Overview	and p	urpose c	of the	course]						
[Course of	bjectiv	'es]								
[Course so	chedu	e and co	ntent	s]						
Linear algeb	ra,5tim	es,								
Linear differ	ential e	quations,5	times,							
Laplace trans	siorm,4 1 of act	times,	in stud	lv 1time						
		-		<i>,</i> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						
[Course re	quire	nents]								
differential a	nd inte	gral, linea	algeb	ora						
[Evaluatio	n met	nods and	polic	¢y]						
exercises and	l report	S								
[Textbook	s]									
Prints are dis	stribute	d in the cla	iss.							
[Reference	es, etc	.]								
(Referen	ice bo	oks)								
[Study out	side c	f class (	orepa	ration and	d revie	w)]				
(Other inf	ormat	ion (offic	e hou	urs, etc.))						
*Please visit	KULA	SIS to find	d out a	bout office	hours.					

Course number         U-ENG25 35054 SJ71         U-ENG25 35054 SJ77											
Course title (and course title in English)	<b>物</b> 理 Exe	∎⊥≛ rcise	学演習 1 on Engir	習 1 ( 宇 ) Engineering Science 1 of affiliation					le, ient	Part-time Leo Part-time Leo Part-time Lectu	cturer, cturer, rer,KOBAYASHI TAKUMI
Target yea	r	3rd ye	ear students c	or above	Number	of cred	its	1	Year	r/semesters	2023/First semester
Days and perio	r sbc	Thu.3	3,4	Clas	s style	Semina	ar			Language of instruction	Japanese
[Overview	and	d pu	rpose o	f the	course]						
[Course o	bjec	ctive	s]								
[Course s	che	dule	and co	nten	ts]						
,5?6times, ,5?6times, ,2times, ,1time,											
[Course re	equi	irem	ents]								
None											
[Evaluatio	n m	eth	ods and	polie	cy]						
[Textbook	s]										
[Reference	es, e	etc.]									
(Referer	nce	boo	<b>ks</b> )								
[Study ou	tsid	e of	class (p	orepa	ration and	d revie	w)]				
( Other in	forn	natio	on (offic	e ho	urs, etc.) )	)					
*Please visit	KU	LAS	IS to find	louta	about office	hours.					

										未更新
Course nur	nber	U-EN	G25 3:	5055 SJ71	U-EN	G25	35055	SJ77		
Course title (and course title in English)	学演習 2 ≥ on Engi	(⊥⊃ neerin;	ネ) g Science 2	2	Inst nan and of a	ructor's ne, job tit departm ffiliation	le, ient	Graduate School of Energy Science Professor, KAWANABE HIROSHI Graduate School of Energy Science Professor, KASHIWAYA YOSHIAK Graduate School of Energy Science Professor, IMATANI SHIYOUJI Graduate School of Energy Science Associate Professor, MATSUMOTO KAZUHIKO Graduate School of Energy Science Associate Professor, HORIBE NAOTO Graduate School of Energy Science		
Target year	3rd ye	ear students o	or above	Number	of cred	its	1	Year	/semesters	2023/Second semester
Days and period	<b>ls</b> Tue.2	2	Class	s style	Semina	ar			Language of instruction	Japanese
[Overview a	and pu	irpose c	of the	course]						
Exercises for to solve them	and sul	pic relate	d to er gnmen	nergy scien its. Answer	ce will t	mm	enets in	during	g related field	students are supposed ls will also be provided.
[Course ob	jective	;s]							<u> </u>	
This class ain exercises.	ns to he	Ip studen	ts to le	earn fundan	nental m	latte	rs in the	field	of energy scie	ence acquire by solving
[Course sc	hedule	and co	ontent	ts]						
Thermal engi Hydrodynami Mechanics of Thermodynar Physical Cher Crystallograp Summary, 1 v	neering ics, 3 w materia nics, 2 mistry, 2 hy, 2 w week	, 3 weeks eeks als. 2 wee weeks 2 weeks eeks	eks							
[Course ree	quirem	ients]								
It is desirable	that stu	idents lea	rned t	he basis of	each top	oic.				
[Evaluation	n meth	ods and	polic	cy]						
Evaluation wi	ill be ba	used on ac	ctive p	articipation	and ass	signi	nents.	<sub>c</sub>	 ontinue to 物理	- 工学演習 2(エネ) <b>(2)</b>

# 物理工学演習2(エネ)**(2)**

## [Textbooks]

Handout will be provided in each topic.

## [References, etc.]

(**Reference books**) Introduced during class

# [Study outside of class (preparation and review)]

Students are supposed to study the contents of each topic before the course.

# (Other information (office hours, etc.))

Course nu	Course number         U-ENG25 35055 SJ71         U-ENG25 35055 SJ77											
Course title (and course title in English)	<b>物</b> 理 Exe	里工 <del>:</del> ercise	学演習 2 e on Engir	(原 neerin	) g Science 2	2	Inst nan and of a	tructor's ne, job tit I departm affiliation	le, ient	Graduate School of Engineering ALL STAFF Graduate School of Engineering Professor, YOKOMINE TAKEHIKO Graduate School of Engineering Assistant Professor, OGURE KENZOU		
Target yea	r	3rd y	ear students c	or above	Number	of cred	lits	1	Year	r/semesters	2023/Second semester	
Days and perio	ods ]	Γue.∠	4,5	Clas	s style	Semina	ar			Language of instruction	Japanese	
[Overview	i an	d pu	irpose o	f the	course]							
[Course o	bjeo	ctive	es]									
[Course s	che	dule	e and co	nten	ts]							
,4times, ,5times, ,5times, ,1time,												
[Course re	equ	irem	nents]									
None												
[Evaluatio	n m	neth	ods and	poli	cy]							
[Textbook	s]											
[Referenc	es,	etc.	<u> </u>									
(Referer	nce	boo	<b>iks</b> )									
[Study ou	tsid	le of	class (r	orepa	ration and	d revie	w)]					
(Other in	forn	nati	on (offic	e ho	urs, etc.) )	)						
*Please visit	t KU	JLAS	SIS to find	l out a	about office	e hours.						

										未更新
Course nu	umber	U-EN	G25 35055 SJ71	U-EN	G25	35055	SJ77			
Course title (and course title in English)	<b>物理</b> 工 Exercia	「学演習 2 se on Engin	(宇) neering Science	(宇) heering Science 2			tle, nent	Part-time Lecturer,NAKANISHI TOSHIYUK Part-time Lecturer,FUJIWARA SATOSH Part-time Lecturer,SASAKI ATSUSH		
Target yea	<b>r</b> 3rd	year students of	or above <b>Number</b>	of cred	lits	1	Yea	r/semesters	2023/Secon	nd semester
Days and peric	ods Fri.	Language of instruction	Japanese							
[Overview	and p	ourpose o	f the course]							
Conduct lect	ture and	l exercise o	on aircraft and sp	pacecraft	desi	ign.				
[Course o	bjectiv	/es]								
Understand t aircraft/spac	the basi ecraft c	s of aircraflesign.	ft/spacecraft syst	tems and	flig	ht dynai	mics, a	and acquire a	basic attitude	e toward
[Course se	chedu	le and co	ntents]							
<ul> <li>History of History of</li> <li>2. Spacecraf Summary</li> <li>Summary</li> <li>Summary</li> <li>Spacecraf Kepler monogram</li> <li>Transfer of</li> <li>Spacecraf Thrust and Specific in Ideal velo Multi-stag Required</li> </ul>	f aircraft f spaced f spaced of sate of sate of rock of prop t - Orbit of orbit t - Prind d effect mpulse ocity and ge rocko	It developm craft develo mary of sa llite system cet system pulsion syst t of satellit ciple of roc ive exhaus d mass com et y incremen	nent and effort in opment and effor tellite and rocke tem of spacecraf e [1 week] eket propulsion [ t velocity nponent	n Japan rt in Japa t systems ft 1 or 2 we	n s [1 s	week] ]				
<ol> <li>Spacecraf Exercise of</li> <li>Aircraft - Airplane s Airplane s Airplane s</li> <li>Airplane s</li> <li>Airplane s</li> <li>Airplane s</li> <li>Aircraft - Standard a</li> <li>Definition Aerodyna Engine pe Major per</li> </ol>	t - Desi on sizin Summa shape structur subsyste engine Airplan atmospl n of velo mic cha erforma	gn exercise g of rocket ary of airpl e ems he performa here ocity aracteristics nce ces of airpl	e [1 or 2 weeks] specification ane system [1 w ance [2 or 3 wee s	eek] ks]						
							(	Continue to 物理	型工学演習2( <sup>1</sup>	宇) <b>(2)</b>

物理工学演習 2 (宇)**(2)** 

- 8. Aircraft Airplane stability and controllability [1 week] Longitudinal stability and controllability Center of gravity limits Lateral and directional stability and controllability Crosswind landing Trim at engine failure
  9. Aircraft - Airplane airworthiness [1 week] Regulation of airplane airworthiness
  - Lessons learned from accidents
- 10. Aircraft Design exercise [1 or 2 weeks]

Exercise on flight test of airplane

\* As part of the class, students may take a tour of facilities outside the university related to aircraft/spacecraft.

### [Course requirements]

Assumes students understand the fundamentals of dynamics.

### [Evaluation methods and policy]

[Evaluation method]

Evaluation will be based on report (75%) and class performance (25%).

Evaluation for class performance includes the attendance at the class and the effort toward the exercise. [Evaluation policy]

Evaluate the degree of understanding of aircraft/spacecraft systems and flight dynamics, and the degree of mastery of basic attitude toward aircraft/spacecraft design.

### [Textbooks]

Handouts will be distributed.

### [References, etc.]

(Reference books)

Introduced during class

# [Study outside of class (preparation and review)]

Students are likely to make reports outside of class time, which will be imposed during class.

## (Other information (office hours, etc.))

The contents and number of classes are subject to change depending on the situation.

										未更新	
Course nu	umber	U-ENG	G25 3	5056 EJ71							
Course title (and course title in English)	機械シ Mechanic	ステム工 <sup>:</sup> cal and Syste	学実 em Eng	三缺1(機) ingineering Laboratory 1 regineering Laboratory 1 regineerin					Associate Professor,SHIKAMA TAIICH Graduate School of Engineering Professor,TSUCHIYA TOSHIYUKI Graduate School of Engineering Professor,INOUE YASUHIRO Graduate School of Engineering Associate Professor,HIROTANI JUN Graduate School of Engineering Associate Professor,NAMURA KYOKC Institute for Life and Medical Sciences Assistant Professor,MAKI KOICHIRC Graduate School of Engineering Assistant Professor,WAKABAYASHI HIDENOBU Graduate School of Engineering Assistant Professor,KURIYAMA REIKC		
Target yea	<b>r</b> 3rd y	vear students o	or above	Number o	of cred	its	1	Year	/semesters	2023/First semester	
Days and perio	ods Wed	.4,5	Class	s style	Experi	men	t		Language of instruction	Japanese	
[Overview	and p	urpose o	f the	course]							
10											
[Course o	bjectiv	esj									
[Course s	chedul	e and co	ntent	ts]							
,1time, ,2times, ,2times, ,2times, ,2times, ,2times, ,1time, ,1time, ,2times,		nontol									
	equiren	nentsj									
								<sub>c</sub>	ontinue to 機械シ		

機械システム工学実験1(機)**(2)** 

# [Evaluation methods and policy]

[Textbooks]

### [References, etc.]

(Reference books)

[Study outside of class (preparation and review)]

### (Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

#### [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

									未更新
Course number	r U-EN	G25 3	5056 EJ71						
Course title (and course title in Mecha English)	験1(機) gineering Lab	oratory 1	Instructor's name, job title, and department of affiliation			Graduate School of Engineering Associate Professor,SHIKAMA TAIICHI Graduate School of Engineering Professor,TSUCHIYA TOSHIYUKI Graduate School of Engineering Professor,INOUE YASUHIRO Graduate School of Engineering Associate Professor,HIROTANI JUN Graduate School of Engineering Associate Professor,NAMURA KYOKO Institute for Life and Medical Sciences Assistant Professor,MAKI KOICHIRO Graduate School of Engineering Assistant Professor,WAKABAYASHI HIDENOBU Graduate School of Engineering Assistant Professor,KURIYAMA REIKO			
Target year 3	rd year students	or above	Number	of cred	lits	1	Year/	semesters	2023/Second semester
Days and periods ${f M}$	on.4,5	Clas	s style	Experi	men	t		Language of instruction	Japanese
[Overview and	purpose c	of the	course]						
[Course object	ives]								
[Course sched	ule and co	nten	ts]						
Guidance,2times, Basic knowledge detection. Intrusion Detection based IDS by studi issued from IDS a Intrusion Detection traffic by machine Presentation,1time machine learning,	Guidance on on the role of on by Signatu lying open so and commun on by Machine e learning alg e,Based on t and discuss	how of IDS are-Ba ource ication he Lea gorithm he exe it wit	this class is in network used IDS,5ti signature-bans, and addi urning,7time ms and puble ercise, stude h other stud	operate security mes,Lea ased ID ng sign es,Learn lic datas nts pres ents and	d, and y and arn t S and ature the set for sents d ins	nd how n d how n che mecl d attack es to det method or bench their m structors	to use on hachine hanism ts, such tect atta of class markir tethods	computing fa learning car of intrusion as correspon ccks. ssifying norm of intrusion co of intrusion	cility for this class. a help the intrusion detection by signature- andence between alarms hal and malicious letection performance. detection using
[Course requirements]									
None							<u>-</u> c		ステム工学実験1(機) <b>(2)</b>

機械システム工学実験1(機)**(2)** 

# [Evaluation methods and policy]

[Textbooks]

### [References, etc.]

(Reference books)

[Study outside of class (preparation and review)]

### (Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

#### [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

						未更新
Course number	r U-ENO	G25 35057	EJ71			
Course title (and course title in Mecha English)	システム工 anical and Syste	学実験 2 em Engineeri	( 機 ) ng Laboratory 2	Instructor's name, job ti and departn of affiliation	Graduate Sc Associate Pro Graduate Sc Assistant Profes Graduate Sc Associate Pro Graduate Sc Senior Lectur Graduate Sc Associate Profess Associate Profess Graduate Sc Associate Profess Graduate Sc Assistant Profess Graduate Sc Assistant Profess	hool of Engineering Sessor,SHIKAMA TAIICHI hool of Engineering sor,TERAKAWA TATSURO hool of Engineering fessor,KOUNO DAISUKE hool of Engineering er,NAKANISHI HIROAKI hool of Engineering or,MATSUMOTO MITSUHIRO hool of Engineering sor,NAMURA KYOKO hool of Engineering sor,NAMURA KYOKO hool of Engineering sosor,Wataru MATSUNAGA hool of Engineering essor,FUJIMOTO KAZUYA hool of Engineering
Target year 3	rd year students o	or above <b>Nur</b>	nber of crec	lits 1	Year/semesters	2023/First semester
Days and periods Th	nu.4,5	Class sty	le Experi	ment	Language of instruction	Japanese
[Course object [Course sched ,1time, ,2times, ,2times, ,2times, ,2times, ,1time, ,1time, ,2times,	ule and co	ntents]				
					Continue to 機械シ	ステム工学実験2(機) <b>(2)</b>

機械システム工学実験2(機)**(2)** 

# [Course requirements]

None

[Evaluation methods and policy]

[Textbooks]

[References, etc.]

(Reference books)

[Study outside of class (preparation and review)]

(Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

[Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

							未更新
Course number	U-EN	G25 35057 EJ71					
Course title (and course title in Mecha English)	Instructor's name, job ti and departn of affiliation	tle, nent	Graduate Sch Associate Profi Graduate Sch Assistant Profess Graduate Sch Associate Profi Graduate Sch Senior Lecture Graduate Sch Associate Profess Graduate Sch Associate Profess Graduate Sch Associate Profess Graduate Sch Assistant Profe Graduate Sch Assistant Profe	nool of Engineering essor,SHIKAMA TAIICHI nool of Engineering or,TERAKAWA TATSURO nool of Engineering ressor,KOUNO DAISUKE nool of Engineering or,NAKANISHI HIROAKI nool of Engineering or,MATSUMOTO MITSUHIRO nool of Engineering ofessor,HIROTANI JUN nool of Engineering or,NAMURA KYOKO nool of Engineering ssor,Wataru MATSUNAGA nool of Engineering ssor,FUJIMOTO KAZUYA nool of Engineering r,WAKABAYASHI HIDENOBU			
Target year 3	rd year students o	or above <b>Number</b>	of cred	lits 1	Year	r/semesters	2023/Second semester
Days and periods Th	u.1,2	Class style	Experi	ment		Language of instruction	Japanese
[Overview and	purpose o	of the course]					
[Course object	ives]						
[Course sched	ule and co	ontents]					
Guidance,2times, Basic knowledge detection. Intrusion Detectio based IDS by stud issued from IDS a Intrusion Detectio traffic by machine Presentation,1time machine learning,	Guidance on on the role o n by Signatu ying open so nd commun n by Machir learning alg e,Based on th and discuss	how this class is of IDS in network ure-Based IDS,5 ource signature-l ications, and add ne Learning,7tim gorithms and put he exercise, stud it with other stu	s operate k security times,Lea based ID ling signa les,Learn blic datas ents pres dents and	d, and how n and how n arn the mech S and attack atures to det the method et for bench ents their m d instructors	to use nachin hanism ts, such tect att l of cla nmarki nethods s.	computing fa e learning can h of intrusion h as correspon acks. Issifying norm ng intrusion d s of intrusion o	cility for this class. help the intrusion detection by signature- idence between alarms hal and malicious letection performance. detection using
					C	Continue to 機械シ	ステム工学実験2(機)(2)

機械システム工学実験2(機)**(2)** 

# [Course requirements]

None

[Evaluation methods and policy]

[Textbooks]

[References, etc.]

(Reference books)

[Study outside of class (preparation and review)]

(Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

[Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

										未更新	
Course nu	umber	U-ENO	G25 3	5058 EJ71							
Course title (and course title in English) 機械システム工学実験3(機) Mechanical and System Engineering Laboratory 3						Instructor's name, job title, and department of affiliation			Graduate School of Engineering Associate Professor,SHIKAMA TAIICH Graduate School of Engineering Program-Specific Assistant Professor,FURUTA KOZ Graduate School of Engineering Associate Professor,HIROTANI JUN Graduate School of Engineering Associate Professor,NAMURA KYOKO Graduate School of Informatics Assistant Professor,KATO SHOTA Graduate School of Engineering Program-Specific Assistant Professor,Yamato, Shuntar Graduate School of Engineering Assistant Professor,Susumu Minam Graduate School of Engineering Assistant Professor,Susumu Minam Graduate School of Engineering Assistant Professor,ADACHI MASATO		
Target yea	<b>r</b> 3rd y	ear students o	or above	Number o	of cred	its	1	Year	/semesters	2023/First semester	
Days and perio	ods Fri.4	,5	Class	s style	Experi	men	t		Language of instruction	Japanese	
[Overview	and pu	urpose o	f the	course]							
10			_								
[Course o	bjectiv	esj									
						_					
[Course s	chedul	e and co	ntent	is]							
,1time, ,14times,											
[Course re	equiren	nents]									
None											
[Evaluatio	n meth	ods and	polic	cy]							
								c	ontinue to 機械シ	ステム工学実験3(機) <b>(2)</b>	

## 機械システム工学実験3(機)**(2)**

### [Textbooks]

#### [References, etc.]

(Reference books)

[Study outside of class (preparation and review)]

(Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

[Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

										不史初	
Course nu	umber	U-ENG	G25 35	5058 EJ71							
Course title (and course title in English) 機械システム工学実験3(機) Mechanical and System Engineering Laboratory 3						Instructor's name, job title, and department of affiliation			Graduate School of Engineering Associate Professor, SHIKAMA TAIICHI Graduate School of Engineering Program-Specific Assistant Professor, FURUTA KOZO Graduate School of Engineering Associate Professor, HIROTANI JUN Graduate School of Engineering Associate Professor, NAMURA KYOKO Graduate School of Informatics Assistant Professor, KATO SHOTA Graduate School of Engineering Program-Specific Assistant Professor, Yamato, Shuntaro Graduate School of Engineering Assistant Professor, Susumu Minami Graduate School of Engineering Assistant Professor, Susumu Minami Graduate School of Engineering Assistant Professor, ADACHI MASATO		
Target yea	<b>r</b> 3rd y	ear students o	or above	Number o	of cred	its	1	Year	/semesters	2023/Second semester	
Days and perio	ods Thu.4	4,5	Class	style	Experi	men	t		Language of instruction	Japanese	
[Overview	and pu	irpose o	f the c	course]							
10001000	Joonn	]									
[Course s	chedule	e and co	ntents	s]							
[Course schedule and contents] Guidance,2times,Guidance on how this class is operated, and how to use computing facility for this class. Basic knowledge on the role of IDS in network security and how machine learning can help the intrusion detection. Intrusion Detection by Signature-Based IDS,5times,Learn the mechanism of intrusion detection by signature- based IDS by studying open source signature-based IDS and attacks, such as correspondence between alarms issued from IDS and communications, and adding signatures to detect attacks. Intrusion Detection by Machine Learning,7times,Learn the method of classifying normal and malicious traffic by machine learning algorithms and public dataset for benchmarking intrusion detection performance. Presentation,1time,Based on the exercise, students presents their methods of intrusion detection using machine learning, and discuss it with other students and instructors.											
[Course re	equiren	ients]									
								<sub>c</sub>	 ontinue to 機械シ		

機械システム工学実験3(機)(2)

# [Evaluation methods and policy]

[Textbooks]

### [References, etc.]

(Reference books)

[Study outside of class (preparation and review)]

### (Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

#### [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

										未更新
Course num	ber	U-EN	G25 3	5059 SJ71						
Course title (and course title in English) 楼械設計演習 1 (機) Exercise of Machine Design 1		Instructor's name, job tit and departm of affiliation		tle, nent	Graduate School of Engineering Professor,NISHIWAKI SHINJI Graduate School of Engineering Associate Professor,NAKAJIMA KAORU Graduate School of Engineering Associate Professor,SHIKAMA TAIICHI Graduate School of Engineering Associate Professor,TATSUMI KAZUYA Graduate School of Engineering Associate Professor,MATSUMOTO MITSUHIRO Graduate School of Engineering Senior Lecturer,NAKANISHI HIROAKI Graduate School of Engineering Associate Professor,HIROTANI JUN Part-time Lecturer,ISOME YUKA Part-time Lecturer,DEGUCHI RYOHEI Part-time Lecturer MATSUURA HIDEKI					
Target year	3rd ye	ear students of	or above	Number	of cred	its	2	Yea	r/semesters	2023/First semester
Days and periods	Mon.4	,5,Fri.4,5	Class	s style	Semina	ar			Language of instruction	Japanese
[Overview ar	nd pu	rpose o	of the	course]						
[Course obje	ective	s]			_		_			
[Course sch	edule	and co	ntent	:s]						
,4times, ,3times, ,-times, ,21times, ,21times, ,21times, ,2times,										
[Course requ	uirem	ents]								
None								,	Continue to 機柄	—————————————————————————————————————
										жнантиа - ( 1/% / <b>(=)</b>

## 機械設計演習1(機)(2)

## [Evaluation methods and policy]

#### [Textbooks]

#### [References, etc.]

(Reference books)

[Study outside of class (preparation and review)]

### (Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

#### [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

										未更新
Course nu	ımber	U-EN	G25 3505	59 SJ71						
Course title (and course title in English) 機械設計演習1(機) Exercise of Machine Design 1				Graduate S Professor, Graduate S Associate P Graduate S Associate P			Graduate Scl Professor,NI Graduate Scl Associate Prof Graduate Scl Associate Prof Graduate Scl Associate Profess Graduate Scl Senior Lecture Graduate Scl Senior Lecture Graduate Scl Associate Pro	nool of Engineering SHIWAKI SHINJI nool of Engineering Sessor,SHIKAMA TAIICHI nool of Engineering essor,TATSUMI KAZUYA nool of Engineering essor,NAKAJIMA KAORU nool of Engineering or,MATSUMOTO MITSUHIRO nool of Engineering er,NAKANISHI HIROAKI nool of Engineering per,NAKANISHI HIROAKI nool of Engineering per,NAKANISHI HIROAKI		
Target yea	ar 3rd year students or above Number of credits 2 Yea						Year	/semesters	2023/First semester	
Days and peric	odsTue.	4,5,Thu.4,5	Class s	tyle	Semina	ır			Language of instruction	Japanese
[Overview	and p	ourpose o	f the co	urse]						
[Course o	[Course objectives]									
[Course se	chedu	le and co	ntents]							
Guidance,2times,Guidance on how this class is operated, and how to use computing facility for this class. Basic knowledge on the role of IDS in network security and how machine learning can help the intrusion detection. Intrusion Detection by Signature-Based IDS,5times,Learn the mechanism of intrusion detection by signature-based IDS by studying open source signature-based IDS and attacks, such as correspondence between alarms issued from IDS and communications, and adding signatures to detect attacks. Intrusion Detection by Machine Learning,7times,Learn the method of classifying normal and malicious traffic by machine learning algorithms and public dataset for benchmarking intrusion detection performance. Presentation,1time,Based on the exercise, students presents their methods of intrusion detection using machine learning, and discuss it with other students and instructors.										
[Course re	equire	ments]								
None								c	ontinue to 機材	

## 機械設計演習1(機)(2)

## [Evaluation methods and policy]

#### [Textbooks]

#### [References, etc.]

(Reference books)

[Study outside of class (preparation and review)]

### (Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

#### [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

							不丈利	
Course number	U-ENG25 3.	5059 SJ71						
Course title (and course title in English) 機械設計演習1(機) Exercise of Machine Design 1				tructor's ne, job ti d departn affiliation	tle, nent	Professor, NISHIWAKI SHINJI Graduate School of Engineering Associate Professor, MATSUMOTO MITSUHIRO Graduate School of Engineering Associate Professor, NAKAJIMA KAORU Graduate School of Engineering Associate Professor, SHIKAMA TAIICHI Graduate School of Engineering Associate Professor, TATSUMI KAZUYA Graduate School of Engineering Senior Lecturer, NAKANISHI HIROAKI Graduate School of Engineering Associate Professor, HIROTANI JUN Part-time Lecturer, YAMAMURA SHINYA Part-time Lecturer, KANATANI KENICHI		
<b>Target year</b> βrd y	ear students or above	of credits	2	Year	/semesters	2023/First semester		
Days and periods Wed.4	4,5,Fri.4,5 <b>Clas</b> s	s style	Seminar			Language of instruction	Japanese	
[Overview and pu	irpose of the	course]						
[Course objective	[Course objectives]							
[Course schedule	and content	s]						
Guidance,2times,Guidance on how this class is operated, and how to use computing facility for this class. Basic knowledge on the role of IDS in network security and how machine learning can help the intrusion detection. Intrusion Detection by Signature-Based IDS,5times,Learn the mechanism of intrusion detection by signature- based IDS by studying open source signature-based IDS and attacks, such as correspondence between alarms issued from IDS and communications, and adding signatures to detect attacks. Intrusion Detection by Machine Learning,7times,Learn the method of classifying normal and malicious traffic by machine learning algorithms and public dataset for benchmarking intrusion detection performance. Presentation,1time,Based on the exercise, students presents their methods of intrusion detection using machine learning, and discuss it with other students and instructors.								
[Course requirem	nents]							
None					<sub>c</sub>	continue to 機柄	或設計演習1(機) <b>(2)</b>	

## 機械設計演習1(機)(2)

## [Evaluation methods and policy]

#### [Textbooks]

#### [References, etc.]

(Reference books)

[Study outside of class (preparation and review)]

### (Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

#### [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

										未更新
Course nu	umber	U-ENO	G25 35	060 SJ71						
Course title (and course title in English)				Instructor's name, job title, and department of affiliation			Graduate School of Engineering Professor, KOMORI MASAHARU Graduate School of Engineering Professor, HIRAYAMA TOMOKO Graduate School of Engineering Associate Professor, KOUNO DAISUKE Part-time Lecturer. KANEDA SHUICHI			
Target yea	<b>r</b> 31	rd year students o	or above 1	Number	of cred	its	2	Yea	r/semesters	2023/Second semester
Days and perio	ods M	on.1,2,3,4	Class	style	Semina	ır	Japanese			
[Overview	and	purpose o	f the c	course]						
[Course o	bject	ives]								
[Course so	ched	ule and co	ntents	s]						
,14times,										
, runne,										
[Course re	equir	ements]								
None										
[Evaluatio	n me	thods and	polic	у]						
[Textbook	s]									
[Reference	es, et	tc.]								
(Referer	nce b	ooks)								
								(	 Continue to 機柄	設計演習2(機) <b>(2)</b>
機械設計演習2(機)(2)

## [Study outside of class (preparation and review)]

(Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

### [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

									未更新		
Course number	U-EN	G25 25	5061 PJ71								
Course title (and course title in Exerc English)	製作実習( ise for Macl	機) hine Sh	nop Practic	e	Instructor's name, job title, and department of affiliation			Graduate School of Engineering Professor,MATSUBARA ATSUSH Graduate School of Engineering Associate Professor,KOUNO DAISUKH Graduate School of Engineering Professor,NISHIWAKI SHINJI			
Target year 2r	arget year       2nd year students or above       Number of credits       1       Year/semesters										
Days and periods We	ed.5	Class	style	Practic	al tr	aining		Language of instruction	Japanese		
[Overview and	purpose o	of the o	course]								
In this training, yo	u will gain §	general	l knowledg	e and ex	kper	ience re	gardin	g manufactur	ing.		
This training consi (1) Machine manu (2) Lectures by fac (3) Factory tour Machine manufact the machine works engines and evalua commercially avai In the lecture, in ac management, etc. a knowledge of mac engineering. In the factory tour, society.	ists of the fo facturing training culty member turing training shop on the ate performan lable engine ddition to fa at machine in hine technologies , you will to	ollowin aining t ers and ng will Katsura ince aft es to de culty n makers logy re ur the f	g three. to practice mechanica be conduc a campus. I ter assemble eepen our u nembers, m were invit equired in the factory of t	the proc al engine ted inte In partic ly. In ad inderstan nechanic ed as le he field, he manu	cess eers nsiv culan lditio ndin cal e ctur , eng ufac	of creat outside ely for a c, we wi on, we w g of act engineer ers, and gine ope	ing pa the un about a ll focu vill as ual me examp rating d learn	rts with vario niversity a week from A as on manufac semble and di echanical elem aged in design ples of machi principles, et n about the ac	us machine tools August to September in eturing parts for Stirling sassemble nents and systems. , manufacturing, ne development, c. Lecture on safety tual manufacturing in		
Course chiest	waal										
Experience the bas machine tools, ma Gain general know	sics of mach chining met vledge about	ining s hods, te t safety	such as turn ools, measu and manu	ning, mi urement facturin	lling t, ma g.	g, and di achining	rilling, g accur	and acquire l acy, etc. thro	basic knowledge about ugh practical learning.		
[Course sched	ule and co	ntents	s]								
Machine tool lectu Lecture on basic k in practical trainin	re: 1 time ( nowledge fo g.	l hour) or safel	) ly using ma	achine to	pols	(lathes,	millin	g machines, o	drilling machines) used		
Stirling engine production training: 3 times (18 hours in total) Practicing the production of round parts (cylinders, bores, etc.) by lathe work, the production of plates (pedestals, etc.) by milling work, assembly, finishing, and evaluation of rotation speed, and manufacturing Stirling engines in pairs.											
					_		(	Continue to 機	搣製作実習(機) <b>(2)</b>		

機械製作実習(機) <b>(2)</b>
Engine operating principle: 1 time (1.5 hours) Learn the basic knowledge of Stirling engine and diesel engine.
Engine assembly / disassembly: 1 time (7 hours) Understand the basics of engine mechanism and machine assembly principles through the assembly and disassembly of commercially available diesel engines.
Introduction to Safety Engineering: Once (3 hours) Lectures and discussions will be given on the mechanism of occupational accidents that occur in factories, disaster prevention technology, fall accidents, malfunctions / malfunctions in crane work, system safety in the equipment industry, etc. [Lecturer schedule] Mr. Kunihito Sato, Sato R & D
Manufacturing Seminar: 4 times (1.5 hours each) Machine engineers engaged in design, manufacturing, management, etc. will be invited as lecturers to give lectures on actual examples of machine development and knowledge of machine technology required in the field. [Lecturer schedule] Mr. Atsushi Iejo, Okuma Corporation Mr. Shinjiro Yukawa, Office YUKAWA Mr. Takao Kusuura, TechnoProducer Co., Ltd.
Mr. Takashi Iwasaki, Kyoto University (formerly Mitsubishi Electric)
Factory tour: 1 time (actual time of the tour is about 4 hours) Tour the factories of manufacturers in the Kansai region and learn about the actual manufacturing in society.
[Course requirements]
None.
[Evaluation methods and policy]
For the credit, students are in principle required to participate in all the classes, and to submit all the reports.
[Textbooks]
A textbook will be handed out in class.
[References, etc.]
( Reference books )
None.
(Related URLs)
(None.)

## 機械製作実習(機)**(3)**

## [Study outside of class (preparation and review)]

The review of the class is reuired for repoert writing. The preparation for the class is occasionally required. The content for the preparation is given through PandA.

### (Other information (office hours, etc.))

The class overview will be presented in a guidance class for 2nd year students in Undergraduate Course Program of Mechanical and Systems Engineering in April. Detailed schedule will be given at the guidance. Please be aware -- a large part of this class will be offered during the summer break.

A class guidance will be given typically in July. Its announcement will be given on PandA. All the students who want to take this class must come to this guidance.

\*Please visit KULASIS to find out about office hours.

### [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

											ŧ	₹更新
Course nu	ımbe	er	U-EN	NG25 3	5062 SJ75							
Course title (and course title in English)       材料科学実験および演習1(材) Materials Science Laboratory and Exercise 1       Instructor's name, job title, and department of affiliation       Graduate School of ALL STAFF Graduate School of Associate Professor,KUR									nool of Engine nool of Engine ssor,KUROKAW	ering ering 'A SHIYUU		
Target yea	r :	3rd ye	ear student	s or above	Number	of cred	its	3	Year	/semesters	2023/First set	mester
Days and perio	odsW	ed.3	,4,Thu.3	,4Clas	s style	Semina	ar			Language of instruction	Japanese	
[Overview	and	l pu	irpose	of the	course]							
[Course o	bjec	tive	es]									
[Course s	chec	dule	and c	onten	ts]							
,6times,												
,6times,												
,6times,												
,0times,												
[Course re	qui	rem	ents]									
None												
[Evaluatio	n m	ethe	ods an	d poli	cy]							
[Textbook	s]											
[Reference	es, e	etc.]										
( Referer	ice l	<b>00</b> 0	ks)									
[Study ou	tside	e of	class	(prepa	aration an	d revie	w)]					
(Other in	orm	atio	on (offi	ce ho	urs, etc.) )	)						
*Please visit	KUI	LAS	SIS to fin	nd out a	about office	e hours.						

											未更新
Course nu	ımbe	er	U-El	NG25 3	5063 SJ75						
Course title (and course title in English)       材料科学実験および演習2(材) Materials Science Laboratory and Exercise 2       Instructor's name, job title, and department of affiliation       Graduate ALL STA Graduate Associate I									Graduate Sch ALL STAFF Graduate Sch Associate Profe	1001 of Engineering 1001 of Engineering ssor,KUROKAWA SHIYU	
Target yea	r :	3rd ye	ear student	s or above	Number	of cred	its	3	Year	/semesters	2023/Second semeste
Days and perio	odsW	ed.3	,4,Thu.3	,4Clas	s style	Semina	ar			Language of instruction	Japanese
[Overview	and	l pu	irpose	of the	course]						
[Course o	bjec	tive	es]								
[Course s	chec	əluk	e and c	onten	ts]						
,6times,											
,6times,											
,6times,											
,oumes,											
[Course re	qui	rem	nents]								
None											
[Evaluatio	n m	eth	ods an	d poli	cy]						
-											
[Textbook	s]										
[Referenc	es, e	etc.]	]								
(Referer	ice l	000	iks )								
[Study our	tside	e of	class	(prepa	aration and	d revie	w)]				
(Other inf	form	atio	on (offi	ice ho	urs, etc.) )	)					
*Please visit	: KUI	LAS	SIS to fi	nd out a	about office	hours.					

						未更新	
Course number	U-ENG25 3	5066 EJ77					
Course title (and course title in English)	宙工学実験 1 g Laboratory in Aeron	( 宇 ) nautics and Astronautics 1	Instructor's name, job ti and departn of affiliation	Gi Pr Gi tle, Pr nent Gi As Gi As	Professor,ERIGUCHI KOUJI Graduate School of Engineering Professor,SENDA KEI Graduate School of Engineering Assistant Professor,HATTORI MASANA Graduate School of Engineering Assistant Professor,ISHII YOSUKI		
<b>Target year</b> 3rd y	ear students or above	Number of cred	its 1	Year/se	emesters	2023/First semester	
Days and periods Fri.3	,4 <b>Clas</b> s	s style Experim	ment	La	anguage of instruction	Japanese	
[Overview and pu	Irpose of the	course]					
[Course objective	es]						
[Course schedule	e and content	s]					
,1time,							
,4times, Atimes							
,4times,							
[Course requirem	nents]						
None							
[Evaluation meth	ods and polic	cy]					
[Textbooks]							
[References, etc.]	]						
(Reference boo	iks )						
				Con	 tinue to 航空宇	音工学実験1(字) <b>(2)</b>	

航空宇宙工学実験1(宇)(2)

# [Study outside of class (preparation and review)]

(Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

# [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

						未更新
Course number	U-ENG25 3	5067 EJ77				
Course title (and course title in English)	宙工学実験 2 g Laboratory in Aero	( 宇 ) nautics and Astronautics 2	Instructor's name, job tit and departm of affiliation	lle, Gr As nent Gr As Gr Se	ool of Engineering IGUCHI KOUJI ool of Engineering ssor,URABE KEIICHIRO ool of Engineering essor,MARUTA ICHIROU ool of Engineering r,SUGIMOTO HIROSHI	
<b>Target year</b> 3rd y	ear students or above	Number of cred	its 1	Year/se	emesters	2023/Second semester
Days and periods Tue.	3,4 <b>Clas</b> :	s style Experim	ment	La	inguage of instruction	Japanese
[Overview and pu	urpose of the	course]				
[Course objective	es]					
[Course schedule	e and content	ts]				
,1time,						
,4times, Atimes						
,4times, ,4times,						
Course requirem	nentsl					
None	•					
[Evaluation meth	ods and polic	cy]				
[Textbooks]						
[References, etc.	]					
(Reference boc	∍ks)					
				Cont		雷工学実験2(宇) <b>(2)</b>

航空宇宙工学実験2(宇)(2)

# [Study outside of class (preparation and review)]

(Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

# [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

Course nu	umber	U-EN	U-ENG25 35069 LJ75										
Course title (and course title in English)	金属材 <sup>;</sup> Structur	料学(材 al Metalic	) Mate	erials		Instructor's name, job title, and department of affiliation Graduate School of Engineering Professor, TSUJI NOBUHIRO							
Target yea	<b>r</b> 3rd y	ear students or above Number of credits 2 Year/semesters 2023/Second semes											
Days and periods       Thu.2       Class style       Lecture       Language of instruction       Japanese													
[Overview	and pu	irpose o	f the	course]									
[Course o	hiective	esl											
	Joon	]											
[Course s	chedule	e and co	ntent	s]									
Outline of L	ecture,1	time,											
Microstructu	ire Evolu	ution in C	ast Al	loys,2times	5,								
Deformation	n, Recove	ery, Recry	stalliz	zation and (	Grain G	owth,3	times	s,					
,3times, Hoot Trootm	ont in St	oole 5tim	20										
Summary 1t	ime	eers, sume	-8,										
Summary, 10	iiiie,												
[Course re	equiren	nents]											
None													
[Evaluatio	n meth	ods and	polic	¢y]									
Attendance,	exercise	s, home-v	vorks	and exam.									
[Textbook	s]												
Reference	os oto	1											
	es, eic.	l ke)											
		/K3 )											
(Related	I URLs	)											
(http://www	v.tsujilab	.mtl.kyoto	o-u.ac	.jp/01Tsujil	Lab/Edu	cation/S	Struc	ctMeta	alMater/)				
[Study outside of class (preparation and review)]													
( Other in	formati	on (offic	e hou	urs, etc.) )									
*Please visit KULASIS to find out about office hours.													

Course nu	ımber	U-ENO	G25 35	5070 LJ75									
Course title (and course title in English)材料強度物性(材)Instructor's name, job title, and department of affiliationGraduate School of Engineering Professor,INUI HARUYUKI													
Target yea	<b>r</b> 3rd	year students o	r above	Number o	of cred	its	2	Year	/semesters	2023/Second semester			
Days and periods       Fri.1       Class style       Lecture       Language of instruction       Japanese         IOverview       and numbers       of the course!													
[Overview	and p	urpose o	f the	course]									
This course deformation grain bounda	This course explaines fundamentals of crystal plasticity and strength of materials including plastic deformation of crystals, yielding, work-hardening, solution hardening, precipitation hardening, properties of grain boundaries, based on dislocation theory.												
[Course o	bjectiv	ves]											
This class ai acquire way:	ms to h s to inte	elp student erpret streng	s to ac gth of	cquire fund crystalline	amental materia	s of ls ba	deformation deform	ation o disloc	of crystalline r ation theory.	materials and also to			
[Course s	chedu	le and co	ntent	s]									
<ul> <li>(2) Work has</li> <li>(3) Strength</li> <li>(4) Dislocati</li> <li>(5) Dislocati</li> <li>(6) Grain bo</li> <li>(7) Feedbach</li> </ul>	rdening and tou ons in c on mot undaies c [1 wee	, solution h ghness of c crystalline h ions and th and crysta ek]	arden compo materi ermal l plast	ing and pre- osites [1 we als [6 week activation] ticity of pol	ecipitatio eek] ts] processo lycrysta	on h es [1 ls [1	ardening l week] l week]	g [3 w	eeks]				
[Course re	equirer	ments]											
Physics of C	rystal F	Properties a	nd Im	perfections	5								
[Evaluatio	n metł	nods and	polic	;y]									
Evaluation v grading dete	vill be t rminati	based on a von.	writtei	n examinati	ion. Atte	enda	ance and	daily	reports may b	be considered in			
[Textbook	s]												
Hand out ma	aterials	will be pro	vided	during the	lecture.								
[Reference	es, etc	.]											
[References, etc.] (Reference books) 鈴木秀次『転位論入門』(アグネ)ISBN:4750702315 J.P. Hirth and J. Lothe 『Theory of Dislocations』(McGraw-Hill)ISBN:TY86299777 J.P. Hirth and J. Lothe 『Theory of Dislocations, 2nd ed.』(Wiley)ISBN:047109125 P.M. Anderson, J.P. Hirth and J. Lothe 『Theory of Dislocations, 3rd ed.』(Cambridge University Press, 2017)ISBN:0521864364 Continue to 材料強度物性(材)(2)													

## 材料強度物性(材)**(2)**

角野浩二(編) 『結晶の塑性』(丸善)ISBN:TW86162567 日本金属学会 『材料強度の原子論』(日本金属学会)ISBN:4889030220 竹内 伸 『結晶塑性論』(内田老鶴圃)ISBN:978-4-7536-5090-3

[Study outside of class (preparation and review)]

To review contents covered in the previous lecture.

(Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

[Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

Course nu	ımbe	er	U-EN	G25 4	5071 LJ71						
Course title (and course title in English)	Course title (and course title in English)       固体物性学(機)       Instructor's name, job title, and department of affiliation       Graduate School of Engineering Associate Professor,NAKAJIMA KA										hool of Engineering essor,NAKAJIMA KAORU
Target yea	r	4th ye	ear students	or above	Number	of cred	lits	2	Year	r/semesters	2023/First semester
Days and perio	ods T	ue.2	2	Class	s style	Lecture	e		_	Language of instruction	Japanese
[Overview	and	d pu	irpose c	of the	course]						
10											
[Course o	bjec	tive	esj								
[Course s	che	dule	e and co	ntent	ts]						
Vibrations o Thermal pro Electronic d Assessment	f cry perti truct of ac	stals es o ures chiev	s,3~4time f crystals of crysta vement,1t	,2time ,2time ls,3~4 time,	es, times,						
[Course re	equi	rem	nents]								
None											
[Evaluatio	n m	eth	ods and	polic	cy]						
[Textbook	s]										
[Reference	es, e	etc.]									
( <b>Referer</b> quotIntroduc {04716805	nce ction 75}	boo to s	olid state	physi	csquot by (	Charles 1	Kitte	el isbn{]	}{978(	0471415268}	, international ed. isbn{
[Study out	tsid	e of	class (	orepa	ration and	d revie	w)]				
( Other in	form	natio	on (offic	e hou	urs, etc.) )	)					

未更新

Course nu	umbe	er	U	-ENG	G25 4	5073 LJ5	7 U-EN	IG25	5 45073	LJ71	U-ENG25 4	5073 LJ75
Course title (and course title in English)	course title and course tle in anglish)								Instructor's name, job title, and department of affiliation			nool of Engineering or,MATSUMOTO MITSUHIRO nool of Engineering OUE YASUHIRO
Target yea	r	3rd ye	year students or above Number of credits 2 Year/semesters 2023/First semester									
Days and periods     Fri.2     Class style     Lecture     Language of instruction     Japanese												
[Overview	and	d pu	ırpo	se o	f the	course]						
Statistical m mechanics tl mechanics, s	<b>[Overview and purpose of the course]</b> Statistical mechanics provides a firm foundation for thermodynamics. I'll give a standard course of statistical mechanics through several basic examples in various fields of science and engineering, including quantum mechanics, solid state physics, heat transfer engineering, and information technology.											
[Course o	bjec	ctive	es]									
- Understand - Scientific	ding view	the 1 of v	relati vario	on be us ph	etween nenom	n macros lena in sc	copic var ience and	iable l eng	s and m ineering	icrosco basec	opic states. l on statistics.	
[Course s	che	dule	e an	d co	ntent	s]						
1st week: Co 2nd week: Co 3rd week: M 4th-6th weel 7th-9th weel 10th-11th w 12th week: I 13th week: I 14th week: I 15th week: I	once Count Iicro ks: V ks: C eeks Photo Appl Exan Feed	pts of ting cance ario (uan )uan : Introns a icati ninat back	of sta micr onica ous en tum rodue and F ion to tion c clas	tistic oscoj l ense nsemi statis ction Phone o Infe	al phy pic sta emble bles a tics (I to sol ons ormati	sics and ites nd Free e Bose-Eins id state p cs	Review of mergies stein vs. H hysics	f bas	i-Dirac)	tics		
[Course re	equi	rem	nent	s]								
Basic knowl useful.	ledge	e of t	thern	nodyı	namic	s, calcult	ıs, statisti	cs, a	nalytica	l mech	anics, and qu	antum physics will be
[Evaluatio	n m	eth	ods	and	polic	¢y]						
- Written ex - Paper assig	amin gnme	atio ent	n									
[Textbook	(s]											
Lecture note	es wi	ll be	e prov	vided								
[Referenc	es, e	etc.]	]									
(Refere	nce	boo	oks)									
Introduced c	lurin	g <u>c</u> la	ass	· _ ·								
										(	Continue to	統計熱刀字(2)

統計熱力学**(2)** 

## [Study outside of class (preparation and review)]

Since this class covers basics in physics with many examples encountered in science and engineering, students of various research fields are welcome.

# (Other information (office hours, etc.))

未更新

Course number	U-ENG25 45	073 LJ57 U	J-ENG2	5 45073	LJ71	U-ENG25 4:	5073 LJ75				
Course title (and course title in English)	力学(材エネ) :al Thermodynarr	nics	Ins nar and of a	tructor's ne, job tit d departm affiliation	ile, nent	Graduate School of Energy Science Associate Professor,MIYAKE MASAO					
<b>Target year</b> 3rd ye	3rd year students or above       Number of credits       2       Year/semesters       2023/Second semesters										
Days and periods     Tue.3     Class style     Lecture     Language of instruction     Japanese											
[Overview and pu	urpose of the c	course]									
[Overview and purpose of the course] In this lecture, fundamental ideas of Statistical Thermodynamics which is effective to microscopic understanding of macroscopic systems and some typical applications to condensed matter physics are presentaed.											
[Course objective	es]										
The goals of this lect study typical applicat	ture are both to un tions to condense	nderstand fur ed matter phy	ndamenta ysics.	al idead	of Stat	tistical Therm	odynamics and to				
[Course schedule	e and contents	5]									
means of measuremn Themodynamic funct Maxwell relations, G Ideal systems,4times, function, relation bet applications of micro ,1time, Canonical ensemble, thermodynamics, Git Quantum statistics,2t statistics, Fermi-Dira condensation. Typical applications, Planck#039s equation Evaluation od goals,1 of homeworks. <b>[Course requirem</b> Students are roughly mechanics, thermody	nts, ergodic theor tions,1time,Ther fibbs-Helmholtz phase space of r tween Helmholtz canonical ensam ,2times,Distributi bbs#039s parado times,Grad canor ac statistics,ideal ,4times,Systems on, one dimansior 1time,Understang	with two leven al harmonic ging of typica	laws, the ermodyna iouville# and Parti as, elastic maximum onical en le of qua lectron sp els, Scho oscillatic al applica	rmodyna amic vari (039s the tion fund of gum) n probab samble. tum stati pecific h ttly type on, Einst ations of	tics, d	unctions, Lege phase equilib micro canoni Principle of Bo Partition funct Fermion and I eal Bose gas, fic heat, Statis odel and speci tic themodyna	endre transform, rium. cal ensemble,Partition oltzmann, simple ion, the 3rd law of Boson, Bose-Einstein Bose-Einstein tics of photons, ific heat of solid states. mics and submission				

統計熱力学(材エネ)(2)

### [Evaluation methods and policy]

Situation of voluntary submission of some reports and score of exam are totally evaluated.

### [Textbooks]

The textbook is not appointed. Writing on the blackboard is performed in every lecture.

#### [References, etc.]

#### (Reference books)

- 1. 原島 鮮:「熱力学・統計力学」培風館, isbn{}{9784563021399}
- 2.N.スミス(小林宏・岩橋槇夫訳):「統計熱力学入門 演習によるアプローチ 」東京化学同
- 人, isbn{}{4807903225}
- 3.市村浩:「統計力学」裳華房, isbn{}{4785321342}
- 4. 市村 浩:「熱学演習 統計力学」裳華房, isbn{}{4785321350}
- 5.キッテル:「熱物理学」丸善, isbn{}{9784621027271}
- 6.沼居貴陽:「熱物理学・統計物理学演習」丸善, isbn { } { 4621048570 }
- 7・W.グライナー,L.ナイゼ,H.シュテッカー(伊藤伸泰,青木圭子訳):「熱力学・統計力学」 シュプリンガー, isbn{}{9784431100577} 8.久保亮五:「ゴム弾性」裳華房 isbn{}{478532807X}

### [Study outside of class (preparation and review)]

(Other information (office hours, etc.))

2nd year students may undestand this lecture if they catch on basics of physics.

											未更新	
Course nu	ımbe	er	U-EN	G25 4	5087 LJ71							
Course title (and course title in English)							Instructor's name, job title, and department of affiliation Graduate School of Engineering Professor,NISHIWAKI SHINJI Graduate School of Engineering Professor,IZUI KAZUHIRO					
Target yea	r i	4th year	students of	or above	Number	of cred	its	2	Year	r/semesters	2023/First semester	
Days and perio	ods W	Ved.4		Class	s style	Lecture	e			Language of instruction	Japanese	
[Overview and purpose of the course]												
This course deals with the basics of quality control methodologies and reliability engineering techniques.												
[Course o	bjec	tives	]									
The goal is t	o uno	dersta	nd the c	concep	ot of numer	ical and	stra	tegic ap	proach	hes of quality	control techniques.	
[Course s	chec	dule a	and co	ntent	s]							
Statistics and Statistical pr Design of ex Analysis of Application Reliability,4	d hyp ocess operin varia of de times	oothes s cont ments nce,2t esign c s,	is testin rol,2tim ,2times, times, of exper	ng,2tin nes, riment	nes, s,2times,							
[Course re	qui	reme	nts]									
None												
[Evaluatio	n m	etho	ds and	polic	cy]							
The regular	exam	ninatio	on, in-cl	ass ex	aminations	and rep	orts	are tak	en into	account.		
[Textbook	s]											
- Not used	-											
[Reference	es, e	etc.]										
(Referer	nce I	book	<b>S</b> )									
[Study ou	tside	e of c	lass (r	orepa	ration and	d revie	w)]					
Homework	orobl	ems a	re assig	ned.								
(Other in	orm	natior	י ו (offic	e hou	urs, etc.)	)						
*Please visit KULASIS to find out about office hours.												

										未更新	
Course nui	mber	U-EN	G25 35	5096 LJ57	U-EN	G25	35096	LJ68			
Course title (and course title in English) 生物物理学 Molecular Biophysics						Instructor's name, job title, and department of affiliation			Associate Professor, TSUCHIDA HIDETSU Institute for Integrated Radiation and Nuclear Sci Associate Professor, SAKURAI YOSHIN Institute for Integrated Radiation and Nuclear Sci Professor, TANAKA HIROKI Institute for Integrated Radiation and Nuclear Sci Assistant Professor, TAKATA, Taku Institute for Integrated Radiation and Nuclear Sci Assistant Professor, SANADA YU Institute for Integrated Radiation and Nuclear Sci Assistant Professor, SANADA YU Institute for Integrated Radiation and Nuclear Sci Assistant Professor, SANADA YU		
Target year	3rd y	ear students of	or above	Number o	of cred	its	2	Year/	semesters	2023/First semester	
Days and period	ds Mon.	.2	Class	s style	Lecture	e			Language of instruction	Japanese	
[Overview	and pu	urpose o	of the	course]							
[Course ob	niective	25]									
Course so	hedule	and co	ntent	s]							
1time	modul										
,2times,											
,1time,											
,1time,											
,1time,											
,1time,											
,1time,											
, Itime,											
, Itime,											
, i uiiie, Itime											
1 time											
,1time,											
,1time,											
[Course ree	quiren	nents]									
None											
	· – –								ontinue to		
										工1010/王丁 <b>\年</b> J	

### 生物物理学**(2)**

# [Evaluation methods and policy]

[Textbooks]

[References, etc.]

(Reference books)

[Study outside of class (preparation and review)]

(Other information (office hours, etc.))

										未更新	
Course nu	ımbe	er l	U-ENG25 4	5099 LJ71							
Course title (and course title in English)							ructor's ne, job ti I departn Iffiliation	tle, nent	Graduate School of Engineering Professor,MATSUBARA ATSUSHI Graduate School of Engineering Associate Professor,KOUNO DAISUKE		
Target yea	r	4th year st	tudents or above	Number o	of cred	its	2	Year	/semesters	2023/First semester	
Days and perio	ue.1	Clas	s style	Lecture	e			Language of instruction	Japanese		
[Overview and purpose of the course]											
The concept of precision required for functional parts is described, and then the machining methods and machines such as machine measurement, cutting / grinding / polishing are described. In addition, the beam processing method, special processing method, and additive manufacturing will be explained.											
[Course o	bjec	tives]									
Understand the basic items of removal processing, its processing machine, beam processing, which are the basis of precision processing, and their applications. By acquiring the basic knowledge of the latest machine manufacturing, you will be able to explain the mechanism of the machine manufacturing process.											
[Course schedule and contents]											
<ol> <li>The accur and the accu with the mea</li> <li>Precision dynamics, ty</li> <li>Machine t</li> <li>The conce described.</li> <li>The basics</li> <li>The basics</li> <li>The prince</li> <li>Special pr precision pro</li> <li>Latest pro technology a</li> <li>Summary</li> </ol>	acy r racy sure cuttin pical cools, opt ar s of t iple c ocess cessionessioned p / Fee	required required ment print l tool m once, of d mease beam pro- of addit sing mease ing, ele ing tech rocessing edback,	l for parts and d for parts i rinciple, and nding / polis laterials and describe the surement me cocessing, of ional process ethods such ectric discha mology, one ng technolo , 1 time,	nd measurin s outlined. I l the process shing, 4 tim their select basic struct ethod of mo nce, process ssing, once, as special p rge machinice, the trend gy.	ig instru In additi sing me es, the p ion met ture and tion acc sing usin and add rocessin ing, and of resea	imer ion, thod princ hod l con curace ng a lition ng, cc l etcl arch	nts, 3 tin the mea l of mea ciple of s are ex- nponent cy, twice laser be nal proc one-time hing will and de	nes, pr asuring surem precisi plained s of m e, mac eam or eam or essing proce ll be es velopm	recision mach i instrument is ent data is des ion cutting / g d. achine tools. hine tool mot electron beam is described. essing, micro j cplained. nent on the lat	ine parts are illustrated, described together scribed. rinding / polishing, ion accuracy are n will be explained. processing, ultra- test processing	
[Course re	equi	remen	tsj								
Knowledge ( manufacturi	of me ng tra	echanic aining(l	al design ar Kikai Seisak	id manufact cu Jissyu).	uring is	req	uired. It	is des	irable to take	machine	

### 精密加工学(機)**(2)**

### [Evaluation methods and policy]

Depends on the test score. Test whether you can acquire the knowledge shown in the goal and solve the problem by applying it.

#### [Textbooks]

Not used

#### [References, etc.]

(Reference books)

### [Study outside of class (preparation and review)]

Review the materials distributed after each lecture. Perform the tasks given during the class to deepen your understanding.

# (Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

#### [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

									未更新		
Course nu	umber	U-ENG25	35102 LJ75								
Course title (and course title in English)	材料電 Electro	気化学(材) chemistry of N	Aaterials Proc	cessing	Inst nan and of a	ructor's ne, job tit I departm Iffiliation	ile, ient	Graduate Sch Professor,MU Graduate Sch Associate Profe	nool of Engineering JRASE KUNIAKI nool of Engineering essor,FUKAMI KAZUHIRO		
Target yea	<b>r</b> 3rd	year students or abo	ove Number	of cred	its	2	Year	/semesters	2023/First semester		
Days and perio	ods Wed	1.1 <b>Cla</b>	ss style	Lecture	e			Language of instruction	Japanese		
[Overview and purpose of the course] This course serves the fundamentals related to solution chemistry of electrolytes and electrode reactions, which become the basis of wet processing such as electrolytic refining, electrowinning, corrosion, anticorrosion, and functional electrodeposition.											
[Course objectives]											
In this course students learn basic technical terms and basic concepts of physical chemistry, which are necessary to study materials science and engineering from the viewpoints of solution chemistry and electrochemistry, to take subsequent advanced courses on materials science and engineering.											
[Course schedule and contents]											
Overview 1 time											
Solution che	mistry	of electrolytes,	2 times, acid	l-base re	eacti	ons, red	ox rea	ctions, equilil	prium of them.		
Introduction electrode sur and Nernst's	of elec rface as equatio	trode potential an interface fo on.	and its relation or exchange the	on to ch he carrie	emi er, e	cal theri xplanati	nodyn on of t	amics, 4 time he concept of	s, explanation of electrode potential		
Electrolysis, electrodes).	1 time,	explanation o	n the importa	nce of t	hree	electro	de setu	ıp (working, c	counter and reference		
Electrode ressurface towa	actions, ard unde erpoten	4 times, expla erstanding of b tial, diffusion-	nation on the atteries and c limitation of	fundan orrosior reactant	nenta 1, ex 28.	als of ele planatic	ectrocl on on t	hemical reacti he relation be	on rate on a electrode tween current and		
Transfer of i and liquid ju	ons, 2 t	imes, explanat potential.	ion on the tra	nsfer of	ion	s in solu	ition fo	or understand	ing diffusion potential		
Summary, 1 time.											
[Course requirements]											
Knowledge given in Thermodynamics of Materials 2 (by Prof. Uda) is preferable.											
				·		·	<sub>c</sub>	 Continue to 材料	▲		

## 材料電気化学(材)**(2)**

### [Evaluation methods and policy]

(1) Class participation, (2) take-home assignments, and (3) exams. Students will sign a roll sheet every class. Supplementary examination to bail out low-performing students will not be given for any reason.

#### [Textbooks]

A course booklet written in Japanese will be given out at the first lecture.

#### [References, etc.]

 $(\ {\rm Reference\ books\ })$ 

### [Study outside of class (preparation and review)]

Reports given in the lectures will return after checking. Brush up according to the reports returned.

## (Other information (office hours, etc.))

Course number	U-ENG25 4	45107 SJ28	U-ENG	G25	45107	SJ57	U-ENG25 45	5107 SJ77				
Course title (and course title in English)       原子炉基礎演習・実験(原)       Instructor's name, job title, and department of affiliation       Instructor's name, job title, and department of affiliation       Institute for Integrated Radiation and Nuclear Science Professor, UNESAKI HIRONOBU Institute for Integrated Radiation and Nuclear Science Associate Professor, PIYON CHIYORUH Institute for Integrated Radiation and Nuclear Science Associate Professor, PIYON CHIYORUH Institute for Integrated Radiation and Nuclear Science Associate Professor, YASUNORI KITAMUR												
Target year4th year students or aboveNumber of credits2Year/semesters2023/First semester												
Days and periods Mon.	.3,4 <b>Clas</b>	s style	Semina	r			Language of instruction	Japanese				
[Overview and purpose of the course]												
Basic reactor physics experiments using Kyoto University Critical Assembly (KUCA) which is a small and low power reactor are carried out. Guidance and lectures before experiments are perfomed at Yoshida main campus, and experiments are perfomed at Research Reactor Institute (Osaka Kumatori-cho).												
[Course objective	es]											
Understanding nucle experiments	Understanding nuclear characteristics and safety system of nuclear reactor through reactor physics experiments											
[Course schedule and contents]												
Guidance,6times,Gui Experiment,1time,Ex week. 1) guidance 2) measurement experir	idance and lect speriments are criticality app ment 5) operati	ures for exp performed a roarch expe on of nuclea	beriments at Resear riment 3 ar reactor	s are rch F ) con r	perforn Reactor ntrol roo	med at Institu d carib	Yoshida main te (Kumatori- pration experin	n campus. -cho, Osaka) for 1 ment 4) neutron flux				
[Course requirem	nents]											
Basic knowledge abo	out reactor phy	sic										
[Evaluation meth	ods and poli	cy]										
reports before and af	ter experiment	S										
[Textbooks]												
Korean version is ava	ailable											
[References, etc.]	]											
(Reference boo	oks)											
Introduced during cla	ass											
							continue to 原子炉	基礎演習・実験(原) <b>(2)</b>				

## 原子炉基礎演習・実験(原)**(2)**

# [Study outside of class (preparation and review)]

Before experiment, several reports related to reactor physics should be submitted.

### (Other information (office hours, etc.))

English course for this experiment is opened.

\*Please visit KULASIS to find out about office hours.

### [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

										未更新	
Course n	umbe	er U-H	ENG25 1	5110 LJ71	U-EN	G25 1	15110	LJ77			
Course title (and course title in English)	物 Intro	型工学総論 oduction to	à A 9 Enginee	ering Scienc	e A	Instructor's name, job title, and department of affiliation			Graduate School of Engineering Professor,NISHIWAKI SHINJI Graduate School of Engineering Professor,IZUI KAZUHIRO Graduate School of Engineering Associate Professor,TATSUMI KAZUYA Graduate School of Engineering Senior Lecturer,OKINO SHINYA Graduate School of Engineering Professor,KOMORI MASAHARU Graduate School of Informatics Professor,OHTSUKA TOSHIYUKI Graduate School of Engineering Professor,YOKOKAWA RYUUJI Graduate School of Engineering Professor,INOUE YASUHIRO Graduate School of Engineering Associate Professor,NAKAJIMA KAORU Graduate School of Engineering Senior Lecturer,SENAMI MASATO Graduate School of Engineering Professor,OOWADA TAKU Graduate School of Engineering Professor,OOWADA TAKU		
Target yea	ır	1st year stude	nts or above	Number o	of cred	lits 2	2	Year	r/semesters	2023/First semester	
Days and peri	ods V	Ved.5	Clas	s style	Lecture	e			Language of instruction	Japanese	
[Overview	v and	d purpos	e of the	course]							
[Course o	objec	tives]									
	-	-									
[Course s	sche	dule and	content	ts]							
,10times, Atimes											
,1time,											
[Course r	equi	rements]									
None											
		<b>_</b>		<b></b>					<b></b>		
			Ø					(	Continue to	勿理工学総論 A <b>(2)</b>	

## 物理工学総論A**(2)**

## [Evaluation methods and policy]

[Textbooks]

[References, etc.]

(Reference books)

[Study outside of class (preparation and review)]

(Other information (office hours, etc.))

未更新

Course n	umbe	r U-ENG	G25 151	11 LJ28	U-EN	G25	15111	LJ75	U-ENG25 1	5111 LJ77
Course title (and course title in English)	生学総論 B	ngineerin	ng Scienc	Insti nam and of a	iool of Engineering UJI NOBUHIRO iool of Engineering ofessor,SEKO ATSUTO iool of Engineering JRASE KUNIAKI iool of Engineering DA TETSUYA iool of Engineering ofessor,ICHII TAKASHI iool of Energy Science AGIWARA RIKA iool of Energy Science MIGAWA TAKASHI iool of Engineering KAGI IKUJI iool of Engineering RAKAMI SADAYOSHI iool of Engineering ITOU MANABU iool of Engineering YADERA TAKAYUKI					
Target yea	r	1st year students o	or above <b>N</b>	umber o	of cred	its	2	Year	/semesters	2023/Second semester
Days and perio	ods T	hu.5	Class s	style	Lecture	e			Language of instruction	Japanese
[Overview	and	l purpose o	f the co	ourse]						
[Course o	bjec	tives]								
[Course s	chec	dule and co	ntents]							
,1time, ,5times, ,4times, ,4times, ,1time,										
[Course r	equi	rements]								
None										

### 物理工学総論 B **(2)**

### [Evaluation methods and policy]

#### [Textbooks]

#### [References, etc.]

(Reference books)

[Study outside of class (preparation and review)]

#### (Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

#### [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

											未更新
Course nu	Impe	r	U-EN	NG25 45	5114 LJ53	U-EN	G25	5 45114	LJ57		
Course title (and course title in English)							Inst nan and of a	tructor's ne, job tit I departn affiliation	nool of Engineering fessor,OGURE KENZOU nool of Engineering YADERA TAKAYUKI		
Target yea	<b>r</b> 4	4th yea	ar students	s or above	Number	of cred	its	2	Year	r/semesters	2023/First semester
Days and periods     Thu.2     Class style     Lecture     Language of instruction     Japanese											Japanese
[Overview and purpose of the course]											
Basics of nuclear structure will be explained.											
[Course o	bject	tives	s]								
To understar	nd nu	clear	r struct	ure by u	ising quant	um theo	ry.				
[Course s	ched	lule	and c	ontent	s]						
Properties of Mass formul Structure of Alpha decay Beta decays, Isospin, 2tin Relativistic p Relativistic f Pion field, 1 Confirmation [Course re Quantum ph [Evaluatio exam	[Course schedule and contents]         Properties of nuclei,1time,         Mass formula of nuclei,2times,         Structure of nuclei,2times,         Structure of nuclei,2times,         Alpha decays and fission,2times,         Beta decays,1time,         Isospin, 2times         Relativistic particle, 1time         Relativistic field, 2times         Pion field, 1time         Confirmation of achievement in study,1time,         [Course requirements]         Quantum physics 1 and 2         [Evaluation methods and policy]										
[Textbook	s]										
Not used											
[Reference	es, e	tc.]									
( Referer	ice b	)00k	ks)								
[Study out	tside	e of (	class	(prepa	ration and	d revie	w)]				
solve proble	ms pr	resen	ited in t	the lectu	ıres.						
(Other in	form	atio	n (offi	ce hou	irs, etc.) )	)					
*Please visit	KUL	LASI	IS to fi	nd out a	bout office	hours.					

Course number         U-ENG25 35115 LJ53         U-ENG25 35115 LJ72												
Course title (and course title in English)	加速 Part	【器] icle」	L学(原 Accelerat	) ors			Inst nan and of a	tructor's ne, job tit I departm offiliation	le, ient	Graduate Sch Associate Profess	nool of Engineering sor,TSUCHIDA HIDETSUGU	
Target yea	r	3rd ye	ar students o	r above	Number	of cred	its	2	Year	/semesters	2023/First semester	
Days and perio	Days and periods         Wed.1         Class style         Lecture         Language of instruction         Japanese											
[Overview and purpose of the course]												
[Course o	bjec	tive	s]									
[oogise oplectives]												
[Course s	che	dule	and co	ntent	s]							
,2times,												
,2times,												
,3times, 2times												
,2times,	2times, 2times,											
,3times,												
,1time,												
[Course re	qui	rem	ents]									
None												
[Evaluatio	n m	etho	ods and	polic	cy]							
[Textbook	s]											
[Reference	es, e	etc.]										
(Referer	nce	boo	<b>ks</b> )									
[Study ou	tsid	e of	class (p	repa	ration and	d revie	w)]					
(Other information (office hours, etc.))												
*Please visit	KU	LAS	IS to find	louta	bout office	e hours.						

Course nu	ımbe	er	U-EN	IG25 3	5116 LJ60	) U-EN	G25	5 35116	LJ77			
Course title (and course title in English)	Course title (and course title in English)							tructor's ne, job tit I departm affiliation	tle, nent	Graduate Sch Professor,SA Graduate Sch Associate Profe	nool of Engineering SAKI TAKAYUKI nool of Engineering essor,TAISHI KOBAYASHI	
Target yea	r :	3rd ye	ar students	or above	Number	of cred	lits	2	Year	/semesters	2023/Second semester	
Days and periods         Mon.1         Class style         Lecture         Language of instruction         Japanese											Japanese	
[Overview	and	l pu	rpose	of the	course]							
Lectures on the use of radionuclides, recycling of spent fuel and disposal of radioactive waste, physicochemical fundamentals related to the reactivity of radioactive materials, and essential analytical methods for material state analysis.												
[Course o	bjec	tive	s]									
The course of radioactive r	The course objective is to develop an understanding of the physicochemical properties and reactivity of radioactive materials, and to learn the latest research and engineering applications based on these principles.											
[Course se	chec	dule	and co	onten	ts]							
The main co 1) Atoms, nu 2) Mass, dec 3) Nuclides, 4) Dilution a 5) Cross-sec 6) Nuclear fr 7) Cycle eng 8) Overview 9) Actinide o 10) Chemica 11) Chemica 12) Electroc 13) Reproce 14) Waste tr 15) Feedbac <b>[Course re</b> N/A	ntent uclei, cay ar datir unalys tion, uel cy gineer of g chem al ana al the hemi ssing eatm k; co	ts of , and nd ha ng, tr sis, 1 appl ycle ring: eolo istry alysis rmoo stry g (ext ent ( onfirr	each cla isotope alf-life, racer che NAA lication : nuclear gical dis s and sp dynamic (redox, traction (ion excl mation c	ass ses: s radiati- emistry (analy: (analy: analy: sposal ectroso es (con electri equilit hange : of learn	sion are as on equilibr sis, radiation smelting, c (advance d copy of act plexation, c double la prium, extr reaction, m ing achiev	follows: follows: fon source ompound lispersion inide and solubilit yer) actant, conembrane rement	<ul> <li>&gt;)</li> <li>ds</li> <li>n, ch</li> <li>d fiss</li> <li>ty)</li> <li>ount</li> <li>equ</li> </ul>	emical o sion pro ercurrer ailibriun	equilit ducts nt distr n)	orium) ibution)		
									(	 Continue to 放	 討化学(エネ原) <b>(2)</b>	

## 放射化学(エネ原)**(2)**

### [Evaluation methods and policy]

Grading is based on the score of the periodic evaluations. Students will be evaluated based on their demonstrated understanding of the physicochemical properties and reactivity of radioactive materials and the engineering processes involved.

### [Textbooks]

Other materials are not specified. Handouts, etc. will be distributed during lectures.

#### [References, etc.]

#### (Reference books)

Other, Radiochemistry and Nuclear Chemistry, 4th ed., G. R. Choppin et al., Elsevier (2013) isbn{ 9780124058972};

Nuclear Chemical Engineering, 2nd Ed., M. Benedict et al., McGraw-Hill (1981) isbn{0070045313}, etc.

#### [Study outside of class (preparation and review)]

Focusing on reviewing lecture content and exercises is advisable.

### (Other information (office hours, etc.))

Attend as needed. Some materials may be omitted or added depending on the number of classes in the relevant year.

										未更新		
Course nu	umber	U-ENG	G25 3	5118 LJ75								
Course title (and course title in English)	エネ Thermo	ルギー・材 ochemistry for F	<b>料熱イ</b> Energy :	化学1(材 and Materials S	エネ) Science 1	Inst nan and of a	tructor's ne, job til I departm offiliation	ile, nent	Graduate Sch Professor,HII Graduate Sch Associate Professo	1001 of Energy Science RATO TETSUJI 1001 of Energy Science 0r,HASEGAWA MASAKATSU		
Target yea	<b>r</b> 31	rd year students o	r above	Number o	of cred	its	2	Year	/semesters	2023/First semester		
Days and perio	ods Mo	on.3	Class	s style	Lecture	e			Language of instruction	Japanese		
[Overview	[Overview and purpose of the course]											
This course will provide fundamentals of thermochemistry, which will be necessary to think about environmental-friendly materials production / recycling processes.												
[Course objectives]												
Students will be able to calculate thermochemical properties of pure substances, mixtures and solutions, and use phase diagrams.												
[Course schedule and contents]												
Activity in b Phase diagra Standard sta Review(1 w Feedback(1	Ellingham diagram and equilibrium in gas phase(3 weeks) Activity in binary solution(2 weeks) Phase diagram of binary system(3 weeks) Standard state of activity(2 weeks) Review(1 week) Feedback(1 week)											
None	equin	ementsj										
[Evaluatio	n me	thods and	polic	:vl								
Results are e However, th	evalua ere ar	ted by a tern e cases wher	n-end e the	examinatio results of th	n. 1e quizz	es ir	the lec	tures a	re considered			
[Textbook	s]											
Instructed d	uring o	class						,	ontinue to ⊤ z l. ±.			
エネルギー・材料熱化学1(材エネ)**(2)** 

#### [References, etc.]

# (Reference books)

David R. Gaskell <sup>©</sup>Introduction to metallurgical thermodynamics <sup>(a)</sup> (Scripta Pub. Co) ISBN:0070229457 Seshadri Seetharaman ed. <sup>©</sup>Treatise on process metallurgy, vol.1 Process fundamentals <sup>(a)</sup> (Elsevier) ISBN: 9780080969862

### (Related URLs)

http://www.lupin.mtl.kyoto-u.ac.jp/class.html

## [Study outside of class (preparation and review)]

In order to be useful for review, quizzes submitted will be returned after checking.

# (Other information (office hours, etc.))

Please bring a scientific calculator and a ruler.

										未更新	
Course nu	mbe	r U-ENG	G25 3:	5119 LJ75							
Course title (and course title in English)	エネ Therm	ルギー・材 iochemistry for F	<b>料熱化</b> Energy ;	匕学 2 (材 and Materials S	エネ) Science 2	Inst nan and of a	ructor's ne, job tit I departm Iffiliation	tle, nent	Graduate Sch Professor,HII Graduate Sch Associate Professo	nool of Energy Science RATO TETSUJI nool of Energy Science or,HASEGAWA MASAKATSU	
Target yea	- 3	ord year students c	or above	Number o	of cred	its	2	Year	/semesters	2023/Second semester	
Days and peric	ds M	lon.2	Class	s style	Lecture	e			Language of instruction	Japanese	
[Overview	and	purpose o	f the	course]							
This course environment	will p al-fri	rovide funda endly materia	imenta als pro	uls of therm oduction / re	ochemis ecycling	stry, g pro	, which y cesses.	will be	e necessary to	think about	
[Course o	bject	tives]									
Students wil use phase dia	l be a agran	ble to calculans.	ate the	rmochemic	al prope	ertie	s of pur	e subs	tances, mixtu	res and solutions, and	
[Course se	ched	lule and co	ntent	:s]							
Regular solu Gibbs-Duher Henrian acti Gibbs phase Phase diagra Nernst equat Review(1 wo Feedback(1	[Course schedule and contents] Regular solution model(3 weeks) Gibbs-Duhem equation(1 week) Henrian activity(1 week) Gibbs phase rule(3 weeks) Phase diagram of ternary system(4 weeks) Nernst equation(1 week) Review(1 week) Feedback(1 week)										
[Course re	quir	ements]									
None											
[Evaluatio	n me	ethods and	polic	;y]							
Results are e However, th	valua ere ar	ated by a tern re cases wher	n-end e the	examination results of th	n. 1e quizzo	es ir	the lec	tures a	re considered		
[Textbook	s]										
Instructed du	ıring	class									
[Reference	es, e	tc.]									
( <b>Referer</b> David R. Ga Seshadri See	skell	<b>Dooks</b> ) Introduction man ed. T	on to reatise	metallurgica e on process	al therm	nody urgy	namics, 7, vol.1 l	ı (So Proces C	cripta Pub. Co s fundamenta ontinue to エネルギ・	o) ISBN:0070229457 ls 』 (Elsevier) ISBN: ・材料熱化学2 (材エネ)(2)	

エネルギー・材料熱化学2(材エネ)(2)

9780080969862

### (Related URLs)

http://www.lupin.mtl.kyoto-u.ac.jp/class.html

# [Study outside of class (preparation and review)]

In order to be useful for review, quizzes submitted will be returned after checking.

# (Other information (office hours, etc.))

Please bring a scientific calculator and a ruler.

		_							小丈利	
Course n	umber	U-ENO	G25 35121 LJ′	75	_					
Course title (and course title in English)	固体電 Electon	:子論(材 i Theory of	) f Solids		Inst nan and of a	tructor's ne, job ti I departn affiliation	tle, nent	Graduate School of Engineering Associate Professor,KUROKAWA SHIYUU		
Target yea	r 3rd	year students c	or above <b>Numbe</b>	er of cred	lits 2 Year			/semesters	2023/First semester	
Days and perio	ods Tue.	1	Class style	Lecture	e			Language of instruction	Japanese	
[Overview	<i>i</i> and p	urpose o	f the course	]						
energy band such as meta understandin structural ch states and el [Course o	ls and th als and s ng of sen aracteri lectronic	e basics of semiconducto stics of act defect sta	E band theory. ctors can be exor properties b tual electronic tes of surfaces	Next, we d xplained by based on in: devices su s/interfaces	iscu thin form ch a wit	iss the fanking in nation al is p-n ju h interru	act that terms bout banction upted s	t the electroni of band struc ands. We also s. Finally, we solid periodic	c properties of solids sture. Next, we gain an discuss the main explain the electronic potential.	
Understand general info	rmation	ts that are provided to the concerning	g the electroni	c propertie	s of	metal a	nd sen	(refer to syllal niconductors.	bus). Understand	
[Course s	chedul	e and co	ntents]							
Energy band energy gaps zone scheme Fermi surface band diagran Rothery rule Semiconduce semiconduce Surface/inte structure of Latest topics the course o	ds, 4 clas , Bloch es, recip ces and 1 ms, diffe es. ctors, 4 c of electro tors, p-n rface/de surfaces s, 1 class verall an	sses: Revie ' s theorem rocal lattic band struct erences bet classes: Mc on holes, F i junctions, fect electros, work fun s: Discuss nd confirm	ew free electro n, one-dimens tes and Brillou ture of metal, 3 tween metal ar ovement of Blo fermi level and carrier diffus onic states, 2 c actions, surface the latest resea	on theory, the ional energy in zones. 3 classes: The ind insulators och electro coch electro carrier der ion, operate classes: No e electronice arch and te learning at	he ir gy ba Three rs, b ns ir nsity ing p tatic c sta chno ttain	nfluence ands, red e-dimen band stru n electri- y, intrins principle on of ele tes. ologies n ment.	e of per duced sional acture c field sic sen es of tr ctron a related	riodic potentia zones, expand lattice Fermi of metal, rigid s, concept of o niconductors, cansistors. arrangement in to the conten	al, the occurrence of led zones, periodic surfaces and energy l band model, Hume- effective mass, extrinsic n crystal surfaces, band t of the course. Review	
[Course r	equirer	nents]	-141 111-					4h - D - 1	ant of Direction 1	
Students sho	ould hav Enginee	e complete pring.	ed the solid sta	te physics	cou	rse offer	red by	the Departme	ent of Physical	

# 固体電子論(材)**(2)**

# [Evaluation methods and policy]

Final test, quizzes

#### [Textbooks]

Printouts will be provided

#### [References, etc.]

(Reference books)

『固体物理学入門(上)(下)』(丸善)ISBN:9784621076538 志賀正幸『材料科学者のための固体電子論入門』ISBN:9784753655533

#### [Study outside of class (preparation and review)]

do exercises at course printouts

# (Other information (office hours, etc.))

In addition, course printouts will be distributed

								小之初					
Course nu	umber	U-ENG25 3512	4 SJ71 U-EN	G25 35	5124 SJ7	'7							
Course title (and course title in English)	インタ <sup>・</sup> Internsh	ーンシップ(機) <sup>nip</sup>		Instructor's name, job title, and department of affiliation Graduate School of Engine Professor,KUROSE RYOU Graduate School of Engine Professor,TSUCHIYA TOS									
Target yea	<b>r</b> 3rd y	ear students or above NU	umber of cred	lits 2	Ye	ear/	semesters	2023/Intensive, Second semester					
Days and periods         Intensive         Class style         Seminar         Language of instruction         Japanese													
[Overview	and pu	urpose of the co	urse]										
The aim of t designing ar On-site lear	The aim of the internship is experiencing on-site activities involved production, manufacturing, development, lesigning and research of industrial goods at a factory or a research laboratory of Japanese leading companies. On-site learning of the importance of teamwork and production processes in manufacturing is also the aim.												
[Course o	bjective	es]											
The goal of Engineering motivate one	<b>[Course objectives]</b> The goal of the internship is to master a general method of thinking and methodology at Mechanical Engineering. Furthermore, by learning the relationship between a human and machines at an industry, motivate oneself to study and think about one's career development.												
[Course s	chedul	e and contents]											
As a general weeks. Thus company tou internship su Internship lo the educatio	a rule, the s, the foll ur, a com uch as IA pocation: 1 onal affa	e internship should lowing cases are no ipany explanation r AESTE can be accep Based on recruitme irs office of the Eng	meet the above of approved as a neeting and so o ptable. Int from compar- gineering Science	purpos n interr on. Lor nies. Yo ce offic	se. The d hship; a s nger term bu can fin se (Butsu	lurat shor n mc nd tl ıri K	tion should b t internship s ore than two hem at comp Kyoumu).	e not less than two such as a week, a weeks and an overseas any's web sites and/or					
[Course re	equiren	nents]											
None													
[Evaluatio	on meth	ods and policy]											
Credits (2) a activities.	ire appro	ived based on the su	ummary report	(50%) :	and prese	enta	tion (50%) a	bout the internship					
[Textbook	s]												
Not used													
[Referenc	es, etc.	]											
( Referei	( Reference books )												
[Study ou	tside of	f class (preparat	ion and revie	w)]									
Consult with	n the inte	ernship host location	n.										
(Other in	formati	on (office hours	, etc.) )										

未更新

Pre-registration at the educational affairs office of the Engineering Science (Butsuri Kyoumu) is required.

							未更新
Course number	U-ENG25 3	5124 SJ71	U-ENC	325 35124	4 SJ77		
Course title (and course title in English)	ーンシップ(原 ip	亰)	1	Instructor' name, job and depart of affiliatio	s title, tment on	Graduate Sch KANKEI KY Graduate Sch Assistant Prof	nool of Engineering OIN nool of Engineering Tessor,OGURE KENZOU
Target year 3rd y	ear students or above	Number of	<sup>i</sup> credi	<b>ts</b> 2	Yea	r/semesters	2023/Intensive, Second semester
Days and periods Inter	sive Class	s style	Semina	r		Language of instruction	Japanese
[Overview and pu	irpose of the	course]					
[Course objective	es]						
[Course schedule	and content	ts]					
», »,							
Course requirem	nents]						
None			_		_		
[Evaluation meth	ods and polic	cy]					
[Textbooks]							
[References, etc.]	]						
( Reference boo	oks)						
					(	Continue to イン	ターンシップ(原) <b>(2)</b>

# インターンシップ(原)**(2)**

# [Study outside of class (preparation and review)]

(Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

### [Courses delivered by instructors with practical work experience]

(1) Category

A course that includes off-campus training classes.

(2) Details of instructors ' practical work experience related to the course

											未更新
Course nu	umbe	er	U-EN	IG25 35	125 LE48	U-EN	JG2:	5 35125	5 LE77		
Course title (and course title in English)	物理 Engi	【工学 lish fc	·英語( or Engi	〔原) neering;	Science		Inst nan and of a	tructor's ne, job ti I departr affiliatior	tle, nent	Graduate Scl KANKEI KY Graduate Scl Professor,Ml Graduate Scl Assistant Pro	1001 of Engineering OIN 1001 of Engineering YADERA TAKAYUKI 1001 of Engineering fessor,OGURE KENZOU
Target yea	r	4th year	r students	or above	Number	of cred	lits	2	Year	r/semesters	2023/Intensive, First semester
Days and perio	ods I	Intensi	ive	Class	style	Lecture	e			Language of instruction	Japanese and English
[Overview	anc	d pur	pose	of the c	ourse]						
		_	-								
[Course o	bjec	tives	\$]								
[Course s	cheo	dule :	and co	ontents	<u>.]</u>						
,14times,											
,1time,											
[Course re	equi	reme	ents]								
None											
[Evaluatio	n m	etho	ds and	d policy	/]						
[Textbook	ːs]										
[Reference	es, e	etc.]									
( Referer	າce l	book	<b>:s</b> )								
[Study ou	tsid	e of c	class (	prepar	ation and	d revie	w)]				
(Other inf	form	natior	n (offi	ce hour	r <b>s, etc.)</b> )	)					
*Please visit	t KU	LASI	S to fin	ıd out ab	out office	hours.					

											未更新	
Course nu	Imbe	er	U-EN	G25 2	5127 LJ71							
Course title (and course title in English)	機柄 Desi	<b>战設計</b> ign ar	ŀ製作( nd Manu	機工ス factur	木宇) ing Process	ses	Inst nam and of a	ructor's ne, job ti departn ffiliation	tle, nent	Graduate Sch Professor,MA Graduate Sch Professor,NI	1001 of Engineering ATSUBARA ATSUSHI 1001 of Engineering SHIWAKI SHINJI	
Target yea	r	2nd yea	ar students (	or above	Number o	of cred	its	2	Year	/semesters	2023/First semester	
Days and peric	ods N	Ion.3	<b>b</b>	Class	s style	Lecture	e			Language of instruction	Japanese	
[Overview	and	d pur	rpose o	of the	course]							
in factures, s correlate wit lectures expl in machine r [Course o To acquire b manufacturin	[Overview and purpose of the course] n lectures, students are taught how production efficiency and production cost in machine production correlate with dimension and shape accuracy, quality, life span, and performance of a product. In addition, ectures explain the processing principles and practice of various processing methods used during production n machine manufacturing. [Course objectives] To acquire basic and general knowledge about the structure of machines, design of systems, and nanufacturing methods.											
[Course s	che	dule	and co	ntent	s]							
mechanisms mechanisms required for overview is Manufacture casting, forg described, an materials of Methods of f manufacture semi-finishe should be ap Confirmation	of n macl given of s ing, nd ar diffe finish d by d ma plieo n of	nachin nachin hine p n on t semi-f weldin exent p h proo apply aterial d to th learni	ne produ ne products products the meth finished ing, and lanation parts. cessing, ying fini ls are de he semi- ing achie	acts & acts. Ir , and I ods us mater fabric is give 7 sess sh pro scribe finishe eved,	addition, t now these q sed to proce ials, 4 sessi- tating sheet en on which ions, the pro- pocessing (rep d, and an ex ed materials 1 session	he relati ualities ss parts ons, the metal for method inciples presente splanations of diffe	a ma ionsl rela and prin or th ds an and ed by on is erem	hip betw te to ma the pro aciples a e manu re suited practic gractic given of t parts.	ring, 5 veen th inufact cedure ind pra facture l for m e of th g, grind on whi	turing cost are turing cost are to for these me actice of proce of semi-finis nanufacturing e process in v ding, and abra ach methods o	buttine is given on the nape and precision e explained, and an thods. essing methods such as thed materials are the semi-finished which machine parts are asive machining) to f finish processing	
[Course re	equi	reme	ents]									
None												
[Evaluatio	n m	etho	ds and	polic	>y]							
Evaluation is the examinat	s bas tion	ed or make	1 perform s up 80%	nance 6 of th	in teaching ne final grac	session le, while	s an e pei	d an ene forman	l-of-te ce in t	rm examinati eaching sessio	on. As a general rule, ons makes up 20%.	

## 機械設計製作(機エネ宇)(2)

# [Textbooks]

Not used

#### [References, etc.]

#### (Reference books)

Chichiiwa, K. (ed.), Kikai seisaku-hou tsuuron-jou, (University of Tokyo Press, 1982) ISBN: 4130650343

### [Study outside of class (preparation and review)]

Report assignments may be assigned.

#### (Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

### [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

											未更新
Course nu	ımbeı	r	U-EN	G25 35	128 LJ77						
Course title (and course title in English)	シス Syste	テム] ems Er	L学( nginee	エネ原 ring	)		Inst nan and of a	tructor's ne, job ti I departn Iffiliation	tle, nent	Graduate Sch Professor,KA	nool of Energy Science WANABE HIROSHI
Target yea	<b>r</b> 3	ord year s	students	or above <b>N</b>	Number	of cred	its	2	Year	/semesters	2023/Second semester
Days and perio	ods W	ed.1		Class	style	Lecture	e			Language of instruction	Japanese
[Overview	and	purp	ose o	of the c	ourse]						
Systems eng method of a are offered.	ineer syste Also,	ing is l m, fun energ	basic i action a y syste	dea abo analysis em as or	ut a system , economine of appli	m assen ical eval ication c	nble uati case:	d with s on, opti s; a ther	ome el mizati mal an	lements. In the on method an ad power plan	e course, modeling d reliability analysis t is lectured.
[Course o	bject	tives]									
- To underst	and a	variet	ty of m	nethod a	nd charac	teristics	of s	system a	inalysi	s.	
- To acquire	the b	asic kı	nowled	dge to o	ptimize th	ne energ	y sy	stems.			
[Course s	ched	lule a	nd co	ontents	]						
<ol> <li>Introducti performance</li> <li>Schedule Evaluation a</li> </ol>	on of of a plann nd Re	syster system system ing me eview	ns eng n. Also ethod( Techn	gineering b, lectur 2): Lect lique" an	g(2): Lect e the basic ures on the nd "Critica	tures on cs of sys ne metho al Path I	def stem od o Metl	inition a s engine f a prog nod" are	and strue eerings ram fo e lectur	ucture of a sys s. r work proces red.	stem and basic sses. "Program
3. Linear pro example, an	ogram alysis	nming( of ene	(5): Le ergy sy	ectures o ystem is	on LP met also offer	hod for red.	the	optimiza	ation o	f a system. Fo	or the application
4. Decision- optimization	makir	ng prol	blem(2	2): Lecti	ures on a 1	modelin	g of	decisio	n-mak	ing process a	nd method for
5. System re	liabili	ity ana	alysis(2	2): Lect	ures on a	system (	desi	gn and r	eliabil	ity analysis m	nethod.
6. Applicatio	on for	a ener	rgy sys	stem(2)	: Systems	enginee	ering	g metho	d is ap	plied to therm	al and power plants.
[Course re	equir	emen	nts]								
None											
[Evaluatio	n me	ethod	s and	l policy	/]						
Evaluate by	repor	t(s) an	ıd exar	minatior	1.						
[Textbook	s]										
Instructed du	uring	class									
						·				Continue to シス	テム工学(エネ原) <b>(2)</b>

# システム工学(エネ原)**(2)**

#### [References, etc.]

( Reference books )

Introduced during class

# [Study outside of class (preparation and review)]

Instruct in class.

# (Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

### [Courses delivered by instructors with practical work experience]

(1) Category

(2) Details of instructors ' practical work experience related to the course

Course nu	imbe	er	U-ENG	G25 3	5129 LJ75										
Course title (and course title in English)	構道 Stru	ictur:	性学(材) ral Properties of Materials Instructor's and department of affiliation Graduate School of Engineering Associate Professor,NOSE YOSHITAROU Graduate School of Engineering Professor,TSUJI NOBUHIRO												
Target yea	r	3rd ye	ear students c	or above	Number	of cred	lits	2	Year	r/semesters	2023/First semester				
Days and peric	ods T	ds Tue.3 Class style Lecture Language of instruction Japanese													
[Overview	view and purpose of the course]														
The properties of metals and alloys strongly depend on thier microstructures, which are controlled by processing. We give the lecture on formation mechanism on micro- and nano-structures in metals and alloys from the atomistic viewpoints and thermodynamics. Through the lecture, how to control or utilize practical materials are studied.															
[Course o	bjec	ctiv€	es]												
To study rela	ation of m	1ship	tives] ship between microstructures and properties in metals and alloys. To understand formation crostructures through each phase transformation and its control.												
[Course s	che	dule	and co	nten	ts]										
<ul><li>(1) Thermod</li><li>(2) Thermod</li><li>(3) Phase tra</li><li>(4) Feedbach</li></ul>	ynai nsfo c [1	mics ormation weel	and atom tion throu k]	ic dif gh dif	fusion [1-2 ffusion [5-6	weeks]			J						
[Course re	qui	irem	nents]												
None	_	_													
[Evaluatio	n m	eth	ods and	polie	cy]										
Evaluation v In some case	vill t es, re	be ba eport	used on a vite the stand quize	writte zzes a	n examinati re consider	ion. ed.									
[Textbook	s]														
Utilizing res	ume	s pro	ovided in	the le	cture.										
[Reference	es, (	etc.]	]												
(Referer	nce	boo	oks)												
Introduced d	ntroduced during class														
[Study out	[Study outside of class (preparation and review)]														
To review co See lecture v	onter videc	nts ir os if	n the last t necessary	time t '.	before the le	cture.									
( Other inf	orn	natio	on (offic	e hoi	u <b>rs, etc.)</b> )	1									
*Please visit	KU	LAS	SIS to find	l out a	Other information (office hours, etc.) ) lease visit KULASIS to find out about office hours.										

											未更新
Course nu	umbe	er	U-ENG	G25 3	5130 LJ57						
Course title (and course title in English)	統計 Stati	十力学 istical	(原) Mechar	nics			Inst nan and of a	tructor's ne, job tit I departm offiliation	tle, nent	Graduate Sch Associate Pro	nool of Engineering ofessor,TASAKI SEIJI
Target yea	r	3rd year	r students o	or above	Number	of cred	its	2	Year	/semesters	2023/First semester
Days and perio	ods F	ri.3		Class	s style	Lecture	e			Language of instruction	Japanese
[Overview	anc	d pur	pose o	f the	course]						
[Course o	bjec	tives	5]								
[Course s	cheo	dule a	and co	ntent	ts]						
,3times,											
,5times,											
,2times, 2times.											
,2times,											
,1time,											
[Course re	equi	reme	nts]								
None											
[Evaluatio	on m	etho	ds and	polic	cy]						
[Textbook	s]										
[Referenc	es, e	etc.]									
( Referei	nce	book	<b>s</b> )								
[Study ou	tside	e of c	lass (p	orepa	ration and	d revie	w)]				
(Other in	form	natior	ו (offic	e hou	urs, etc.) )						
*Please visit	t KU	LASIS	S to find	l out a	about office	hours.					

Course nu	umbe	er	U-ENG	G25 2	5133 LJ75						
Course title (and course title in English)	物質 Fund	〔科当 dame	学基礎( Entals of ]	材) Mater	ials Science	•	Inst nan and of a	tructor's ne, job tit I departm affiliation	tle, nent	Graduate Sch Professor,MU	nool of Engineering JRASE KUNIAKI
Target year         2nd year students or above         Number				Number o	of cred	its	2	Year	/semesters	2023/First semester	
Days and periods Fri.3 Class style Lect						Lecture	e			Language of instruction	Japanese
[Overview	and	d pu	rpose o	f the	course]						

Based primarily on the solid-state chemistry, this course serves the outline of notation (descriptive method) and analytical techniques for solid substances, which become the basis of materials science and materials engineering.

#### [Course objectives]

Basic knowledges of physics, chemistry, mathematics, etc. are requires to learn materials science and materials engineering. In this course students learn basic technical terms and develop fundamental concepts of solid-state materials chemistry, to take subsequent advanced courses on materials science and materials engineering.

#### [Course schedule and contents]

Substances and materials, 1 time, Three states of matter; Amorphous and glasses; Liquid crystal; Materials structures and properties in our surrounding living environment.

Fundamentals of crystal structures, 3 times, Close packing and holes; Crystal structure of metals; Point symmetry and space symmetry; Lattice and unit structure; Crystal system and Bravais lattice; Depiction of lattice plane and lattice direction; Fractional coordinates.

Fundamentals of chemical bond theory, 2 times, Electronic configuration and shielding; Size of atoms and ions; Covalency and ionicity; Definition of electronegativity.

Inorganic solid-state materials, 3 times, Structure of important ionic crystals; Stoichiometry and lattice defects; Ionic conduction and solid electrolytes; Crystal field and optical properties of d-block elements. Fundamentals of diffraction crystallography, 5 times, Generation and properties of X-ray; Fundamentals of X-ray scattering and diffraction (Bragg condition, structure factor, extinction rule); Powder X-ray diffractometry; Laue method

Self-assessment of achievement, 1 time, Review of the course contents

#### [Course requirements]

Knowledge of physics and chemistry for the entrance examination of Kyoto University.

#### [Evaluation methods and policy]

(1) Class participation, (2) take-home assignments (approx. 50% in total), and (3) exams (approx. 50%). Students will sign a roll sheet every class. Ten written take-home assignments are due throughout the semester. Supplementary examination to bail out low-performing students will not be given for any reason.

未更新

### [Textbooks]

No textbook is required for this course. A course booklet will be given out at the first lecture.

#### [References, etc.]

#### (Reference books)

B. D. Cullity, S.R. Stock <sup>®</sup>Elements of X-Ray Diffraction (3rd ed.)<sup>a</sup> (Prentice Hall ) ISBN: 9780201610918

L. Smart, E. Moore <sup>C</sup>Solid State Chemistry: An Introduction (4th ed.) (CRC Press) ISBN: 9781439847909

A. R. West <sup>C</sup>Solid State Chemistry and Its Applications (2nd ed.) (Wiley) ISBN:9781119942948

### (Related URLs)

(Not available)

#### [Study outside of class (preparation and review)]

The take-home assignments and their suggested answers should effectively be used for preparation and review.

# (Other information (office hours, etc.))

Not available

Course nu	umber	U-EN	G25 25134 LJ75								
Course title (and course title in English)	材料統 Statistic	A統計物理学(材) Associate Professor,TABATA YOSHIKAZ Graduate School of Engineering Associate Professor,TABATA YOSHIKAZ Graduate School of Engineering Associate Professor,YUGE KORETAK									
Target yea	<b>r</b> 2nd y	ear students	or above <b>Number</b>	of cred	<b>its</b> 2	Yea	r/semesters	2023/Second semester			
Days and perio	ods Tue.2	2	Class style	Lecture	9		Language of instruction	Japanese			
[Overview	and pu	irpose c	of the course]								
10											
[Course o	bjective	esj									
[Course s	chodula	and co	ntonte]			_					
Einst and as	ond low	of theme		ancible p	no oo oo Otim	20					
Thermodyna Analytical n Basic of clas ,3times, Quantum sta Check of act	amic func- nechanic: ssical sta atistical t quisition	ctions, Ph s and con tistical th hermodyn ,1time,	nase Equilibrium cept of statistical ermodynamics,20 namics,3times,	and Phas mechani times,	se Transition ics,3times,	n,2tim	ies,				
[Course r	equirem	nents]									
None											
[Evaluatio	n meth	ods and	l policy]								
[Textbook	s]										
[Referenc	es, etc.	]									
( Refere	nce boo	oks)									
[Study ou	tside of	class (	preparation an	d reviev	w)]						
( Other in	formation	on (offic	e hours, etc.)	)							
*Please visi	KULAS	SIS to fine	d out about office	e hours.							

Courso nu	umbo	r II-FN	IG25.24	5135 I 175								
Course nu	eam		023 2.	)133 <b>LJ</b> 73								
Course title (and course title in English)	材料 Func	科学基礎 1 lamentals of	(材) Materi	als Science	εI	Inst nan and of a	ructor's ne, job tit departm ffiliation	tle, nent	Graduate Scl Associate Profe Graduate Scl Associate Profe	nool of Engineering ssor,KISHIDA KIYOUSUKE hool of Engineering essor,NOSE YOSHITAROU		
Target yea	r 2	2nd year students	or above	Number o	of cred	its	2	Year	/semesters	2023/Second semester		
Days and perio	ods W	/ed.1	Class	s style	Lecture	e			Language of instruction	Japanese		
[Overview	and	l purpose	of the	course]								
To understand structures in solids, mainly metal crystals, from the viewpoint of atomic interaction. Based on the knowledge, to study fundamental characteristics of lattice defects and properties in crystalline solid materials controlled by it, in particular diffusion and mechanical strength.												
[Course o	bjec	tives]										
[Course objectives] The aim of this lecture is to learn a way of considering to understand diffusion and mechanical properties in addition to fundamental studies on crystals and lattice defects.												
[Course s	chec	dule and co	ontent	s]								
<ol> <li>Structure</li> <li>Lattice d</li> <li>Diffusion</li> <li>Deforma</li> <li>Plastic de</li> <li>Plastic de</li> <li>Plastic de</li> <li>Deforma</li> <li>Feedbacl</li> </ol>	[Course schedule and contents] (1) Structure of solids [1 week] (2) Lattice defects [1 week] (3) Diffusion in solids [5 weeks] (4) Deformation of crystalline materials [2 weeks] (5) Plastic deformation of single crystals of metallic materials [2 weeks] (6) Plastic deformation of polycrystalline metals [2 weeks] (7) Deformation twinning and creep deformation [1 week] (8) Feedback [1 week]											
[Course re	equir	rements]										
None												
[Evaluatio	n me	ethods and	d polic	;y]								
A end-term examination will be a main part of grading determination. Attendance and daily reports may be considered in grading determination. The allocation of marks is 50 for each Kishida's and Nose's part. The students will fail as zero if they do not submit any reports.												
[Textbook	s]											
Utilizing res	umes	s provided in	the lec	cture.								

# 材料科学基礎1(材)**(2)**

# [References, etc.]

(Reference books)

Introduced during class

# [Study outside of class (preparation and review)]

To review contents in the last time before the lecture. See lecture videos if necessary.

# (Other information (office hours, etc.))

A part of themes will be added or omitted depending on a number of classes in the term.

Course num	ber	U-EN(	G25 25	5136 LJ75									
Course title (and course 材 title in Fu English)	米斗乔斗: ndam	科科学基礎 2 (材エネ) damentals of Materials Science II Instructor's f affiliation Graduate School of Engineering Associate Professor,FUKAMI KAZUHIRO Graduate School of Engineering Associate Professor,ICHII TAKASHI											
Target year	2nd y	/ear students of	or above	Number	of cred	its 2	Yea	r/semesters	2023/Second semester				
Days and periods	Days and periods       Thu.2       Class style       Lecture       Language of instruction       Japanese												
Overview ar	nd pu	irpose o	f the	course]									
This lecture foc	uses	on symme	etry, te	ensor and el	lastodyr	namics that	are of	importance fo	r materials science.				
[Course obje	ctive	es]											
To understand	the ro	le of sym	metry,	tensor and	elastod	ynamics on	mater	ials science.					
[Course sch	edule	e and co	ntent	s]									
Vector and tens Symmetry in m Elastodynamics	or,4- olecu 3,4-5t	5times,Fu Iles and cr imes,Func	ndame ystals, lament	entals of ve ,4-5times,F tals of elast	ector and Fundame todynan	l tensor entals of syn nics	nmetry	y in molecules	and crystals				
[Course requ	liren	nents]											
Fundamentals of	of the	rmodynan	nics										
[Evaluation I	neth	ods and	polic	;y]									
Grading is due	to the	term-end	exam	ination. Th	e record	d of attenda	nce ma	ay be taken int	to account.				
[Textbooks]													
Handouts will b	be giv	en in lect	ires.										
[References,	etc.	]											
(Reference	) boc	oks)											
[Study outsid	de of	i class (p	orepai	ration and	d revie	w)]							
( Other infor	mati	on (offic	e hou	irs, etc.) )									
*Please visit K	ULAS	SIS to find	l out a	bout office	hours.								

											未更新
Course nu	imbe	ər	U-EN(	G25 3:	5139 LJ76						
Course title (and course title in English)       エネルギー化学1(エネ原)       Instructor's name, job title, and department of affiliation       Graduate School of Energy S Professor,HAGIWARA RIK										nool of Energy Science AGIWARA RIKA	
Target yea	r	3rd year	r students (	or above	Number	of cred	lits	2	Year	/semesters	2023/First semester
Days and perio	s and periods Tue.2 Class style Lecture Language of instruction Japanese										Japanese
[Overview	and	d pur	pose o	f the	course]						
Fundamenta described in bonding and	l che this strue	mistry course ctures	y such a e for dea and the	s quar eper u er ene	itum chemi nderstandir rgetics will	stry, sol ng of end be disc	lid s ergy usse	tate che conver ed in this	mistry sion ar s cours	, physical che nd application se.	emistry will be as. Especially chemical
[Course o	bjec	tives	5]								
Deeper unde	Deeper understanding of energy conversion and applications from the viewpoint of chemistry										
[Course s	cheo	dule a	and co	ntent	:s]						
Atomic struct electronic struct potential, ele ,3times,Und- crystal, close ,2times,The be described ,3times,Cher theory, mole radii, bond e ,2times,Sym to molecular ,3times,Cond effects will b	ectroi ersta e pac facto . The nical nerg metr orbi cepts oe de	,2time ire of i n affir nding king s ors suc- ermoc l bond r geon y will ry ope- itals, r s and t escribe	many-el mity and of fund structure ch as ior chemistr ling theo metry an l be desc eration a molecula theory o ed. Lear	lectror electr lament e, meta nic rad y of so ory an nd VSI cribed. nd syr ar vibi f Bror ning a	atoms, ato onegativ. tals of inorg als, alloys, lii, coordina olid compo d energetic EPR theory mmetry eler ration, vibra isted acids ichievemen	ganic so intermet ation nu unds wi s such a , hybrid ments, n ational s and base t evalua	lid s lid s tallid mbe ll be s Le izati nole s, L tion	atate che c compo e compo e discuss ewis stru ion orbi cular po troscopi Lewis ac will be	ii, lant mistry ounds, e energ sed. acture, tal, mo oint gro es will eids and made	hanide contra such as cryst ionic crystals gy affecting th resonance str plecular orbita pups will be d be discussed d bases, their in the last cla	action, ionization cal lattice, symmetry of and covalent crystals ne crystal structure will ructure, valence bond l, bond length, bonding escribed. Applications reactions, solvent ss.
[Course re	qui	reme	ents]								
None											
[Evaluatio	n m	etho	ds and	polic	;y]						
Overall eval	uatio	n of t	he activ	ity in	the class, h	omewor	rk, a	nd term	-end e	xam	

Continue to エネルギー化学1(エネ原)(2)

エネルギー化学1(エネ原)**(2)** 

### [Textbooks]

Shriver amp Atkins#039 Inorganic Chemistry, the 6th ed., Oxford University Press.

# [References, etc.]

 $(\ {\rm Reference\ books\ })$ 

[Study outside of class (preparation and review)]

#### (Other information (office hours, etc.))

Homeworks will be occasionally assigned as supplementary exercises. Depending on the progress in the class, schedule may be partially changed. Homeworks and supplementary materials are provided at URL:http://www.echem.energy.kyoto-u.ac.jp The text book will be used in Energy chemistry II held in fall semester.

Course nu	Imber	U-ENC	325 35140 LJ76								
Course title (and course title in English)	エネル Energy	レギー化学 y chemistry	2 (エネ原) 2		Inst nam and of a	Instructor's name, job title, and department of affiliation			1001 of Energy Science 30r,MATSUMOTO KAZUHIKO		
Target yea	r 3rd	d year students o	r above <b>Number d</b>	of cred	its	2	Year	/semesters	2023/Second semester		
Days and perio	ods Fri.	.4	Class style	Lecture	e			Language of instruction	Japanese		
[Overview	and p	purpose o	f the course]								
The lecturer particular, R electrochem	teache edox re ical ene	es fundamen eactions, an ergy conver	tal matters in ino alytical methods, sion devices will	rganic c molecu be lectu	them ther guide the second the second	iistry re geometr	lated to ies, an	o energy conv d coordinatio	version and storage. In on chemistry as well as		
[Course o	bjectiv	ves]									
Understandi as their relat	[Course objectives] Understanding fundamental matters on energy conversion and utilization related inorganic chemistry as well as their relations to daily life and state-of-the-art researches										
[Course s	chedu	le and co	ntents]								
<ol> <li>Oxidation reduction po elements</li> <li>Molecular an introducti representation</li> <li>An introduction</li> <li>Exercises</li> <li>Exercises an</li> <li>Summary</li> </ol>	and R tentials symm on to sons uction coordin mation echniq nethods gneton and co d comm , once	eduction, 3 s, redox stal netry, 3 time symmetry ar to coordinat nation chem ues in inorg s, absorption netry, electro pmments, 4 to ments on the	times, pility, diagramma es, nalysis, applicatio tion chemistry, 2 nistry, constitution anic chemistry, 2 n spectroscopy, re ochemical techni times e topics in this lea	times n and ge times ctimes esonanc ques, m	eome e tec icros	tion of p hetry, sy etry, iso chniques sope tec	ootenti mmetr merisr s, ioniz hnique	al data, chem ries of molecu n and chiralit zation-based t es	ical extraction of the alar orbitals, y, thermodynamics of techniques, chemical		
[Course re	equire	ements]									
Students are	suppo	sed to under	rstand the lecture	"Energ	y Ch	nemistry	<sup>,</sup> 1".				
[Evaluatio	n met	thods and	policy]								
Evaluation v	vill be	based on qu	iizes and exercise	es (40 %	) an	d final e	examir	nation (60%).			

Continue to エネルギー化学 2 (エネ原)(2)

エネルギー化学2(エネ原)**(2)** 

### [Textbooks]

Shriver & Atkins; Inorganic Chemistry (6th Ed.) ISBN 9784807908981 which is used in Energy Chemistry 1. isbn{}{9784807908981}

#### [References, etc.]

(Reference books)

[Study outside of class (preparation and review)]

Reading the textbook and reviewing the assignments are recommended.

## (Other information (office hours, etc.))

Quizes are given every week to support understanding of the lecture.

未	更	新	ŕ
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Course nu	umbe	er	U-EN	G25 3	5141 LJ53	U-EN	G25	35141	LJ57	U-ENG25 3	5141 LJ77
Course title (and course title in English)	中性 Neu	主子 Jitron	里工学( Physics a	原) und Er	ngineering		Instructor's name, job title, and department of affiliation			Graduate Sch Associate Pro	ool of Engineering ofessor,TASAKI SEIJI
Target yea	r	3rd ye	ear students o	or above	Number	of cred	its	2	Year	/semesters	2023/Second semester
Days and peric	r sbc	Tue.3		Class	s style	Lecture	e			Language of instruction	Japanese
[Overview	and	d pu	irpose o	f the	course]						
[Course o	bjec	ctive	es]								
[Course se	che	dule	and co	ntent	:s]						
,1time,					_						
,1time,											
,1time,											
,4times,											
,2times,											
,3times,											
,2times,											
,1time,											
[Course re	equi	irem	ents]								
None											
[Evaluatio	n m	ethe	ods and	polic	>y]						
[Textbook	s]										
[Reference	es, (	etc.]									
( Referer	nce	boo	ks)								
			-								
[Study out	tsid	e of	class (p	orepa	ration and	d reviev	w)]				
( Other inf	forn	natio	on (offic	e hou	urs, etc.) )	)					
*Please visit	KU	LAS	SIS to find	l out a	bout office	hours.					

								未更新	
Course nu	umber	U-ENG25 2:	5142 LJ71	U-EN	G25 25142	LJ77			
Course title (and course title in English)	流体力 <sup>。</sup> Fluid Dy	学1(機) ynamics1		Instructor's name, job title, and department of affiliation			Graduate School of Engineering Professor,NAGATA KOJI		
Target yea	<b>r</b> 2nd y	/ear students or above	Number	of cred	lits 2	Year	r/semesters	2023/Second semester	
Days and perio	ods Tue.2	2 Class	s style	Lecture	e		Language of instruction	Japanese	
[Overview	and pu	Irpose of the	course]						
Fundamenta N-S equation	l of fluid ns), solut	l dynamics: intr tion methods of	oduction, fl N-S equati	luid proj ions, lan	perties, gov niner/turbu	erning lent flo	equations (Na ws, boundary	avier-Stokes equations, layer flow.	
[Course o	bjective	es]							
Understandi	ng of the	e principle of flu	uid flow.						
[Course s	chedule	e and content	s]						
2 time : Stat 4 times: Viso 5 times: Mao 2 times: Exe 1 times: Sun	ionary flui cous flui croscopio rcise nmary	uid d (Laminar flov c expression of	v /Turbulen fluid motio	nt flow) on					
[Course re	equirem	nents]							
N/A									
[Evaluatio	n meth	ods and polic	cy]						
Term-end ex	kam								
[Textbook	s]								
Instructed du	uring clas	SS							
[Reference	es, etc.	]							
(Referer	nce boo	oks)							
[Study ou	tside of	l class (prepa	ration and	d revie	w)]				
Instructed du	uring cla	SS.							
( Other in	formatio	on (office hou	urs, etc.) )	)					
*Please visit	KULAS	SIS to find out a	bout office	hours.					

											未更新	
Course nu	umbe	er	U-EN	IG25 2	5142 LJ71	U-EN	G25	25142	LJ77			
Course title (and course title in English)							Instructor's name, job title, and department of affiliation			Graduate School of Engineering Professor,OOWADA TAKU Graduate School of Engineering Senior Lecturer,SUGIMOTO HIROSHI		
Target yea	r 2	2nd ye	ar students	or above	Number	of cred	its	2	Yea	r/semesters	2023/Second semester	
Days and periodsTue.2Class styleLectureLanguage										Language of instruction	Japanese	
[Overview	and	l pui	rpose	of the	course]							
[Course o	bjec	tive	s]									
[Course s	ched	dule	and co	ontent	ts]							
detection. Intrusion De based IDS b issued from Intrusion De traffic by ma Presentation machine lear	etectic y stuc IDS a etectic achine ,1tim rning	on by dying and c on by e lea ne,Ba c, and <b>reme</b>	/ Signat g open s communy Machi urning al used on l discuss ents]	oure-Ba source nication ne Lea gorithu the exe s it with	used IDS,5t signature-b ns, and add urning,7time ms and pub ercise, stude h other stude	imes,Lea based ID ing signa es,Learn lic datas ents pres dents and	arn t S an ature the set fo ents d ins	the mec d attacl es to de method or bencl their n	chanisn ks, suc tect att d of cla hmarki nethod s.	n of intrusion h as correspor tacks. assifying norm ing intrusion of s of intrusion	detection by signature- idence between alarms hal and malicious letection performance. detection using	
None												
[Evaluatio	on me	etho	ods and	d polio	cy]							
[Textbook	s]											
										Continue to 流体	力学1(エネ原宇) <b>(2)</b>	

流体力学1(エネ原宇)(2)

# [References, etc.]

(Reference books)

[Study outside of class (preparation and review)]

(Other information (office hours, etc.))

Course nu	umber	U-E	NG25 35	5143 LJ71	U-EN	G25	5 35143	LJ77		
Course title (and course title in English)       流体力学2(機)       Instructor's name, job title, and department of affiliation       Graduate School of Engineering Professor,HANAZAKI HIDESHI Graduate School of Engineering Senior Lecturer,OKINO SHINYA										
Target yea	<b>r</b> 3rd	year studer	its or above	Number	of cred	lits	2	Year	/semesters	2023/First semester
Days and perio	ods Thu	2	Class	s style	Lecture	e			Language of instruction	Japanese
[Overview	and p	ourpose	of the	course]						
[Course o	bjecti	/es]								
[Course s	chedu	le and o	content	s]						
,2times,										
,4times,										
,2times, 3times										
.1time.										
,2times,										
, 1 times,										
10										
[Course re	equire	mentsj								
Fluid Dynan	nics 1									
[Evaluatio	on met	hods ar	nd polic	;y]						
[Textbook	s]									
[Referenc	es, etc	:.]								
( <b>Refere</b> G. K. Batche 0521041183	<b>nce bo</b> elor, Ai {}, (同,	<b>oks )</b> n Introdu 2000) is	ction to 3 bn{}{97	Fluid Dyna /805216639	amics (C 960}	Camb	oridge U	Jnivers	sity Press, 196	57). isbn{}{
[Study ou	tside (	of class	(prepa	ration and	d revie	w)]				
(Other in	forma	ion (off	ice hou	Irs, etc.)						

Course nu	Course number         U-ENG25 35143 LJ71         U-ENG25 35143 LJ77											
Course title (and course title in English)	流体 Flui	≰力≛ d Dy	学2(エ ynamics2	ネ宇)	)		Instructor's name, job title, and department of affiliation			Graduate School of Engineering Professor,OOWADA TAKU Graduate School of Engineering Senior Lecturer,SUGIMOTO HIROSHI		
Target yea	r	3rd ye	ear students c	or above	Number	of cred	lits	2	Year	/semesters	2023/First semester	
Days and perio	r sbo	Thu.2	2	Class	s style	Lecture	e			Language of instruction	Japanese	
[Overview	and	d pu	irpose o	f the	course]							
[Course o	bjec	ctive	s]									
[Course s	che	dule	and co	ntent	s]							
,2times,												
,3times,												
,3times,												
,otimes,												
,111110,												
[Course re	qui	irem	ients]									
None												
[Evaluatio	n m	eth	ods and	polio	cvl							
L				<b>P</b> • · · · ·	- 7 1							
[Textbook	s]											
-	-											
[Referenc	es. (	etc.]										
(Referen	nce	boo	ks)									
			,									
[Study out	tsid	e of	class (r	orepa	ration an	d revie	w)]					
			<u> </u>				/1					
(Other inf	orn	natio	on (offic	e hou	urs, etc.) )	)						
*Please visit	KU	LAS	SIS to find	l out a	bout office	e hours.						

					未更新
Course number	U-ENG25 45144 LJ71				
Course title (and course title in English)	コ加工学(機エネ) brication	Instructor name, jok and depa of affiliati	r's o title, rtment on	Graduate Sch Professor,TS Graduate Sch Professor,YC Graduate Sch Associate Pro	nool of Engineering UCHIYA TOSHIYUKI nool of Engineering DKOKAWA RYUUJI nool of Engineering ofessor,HIROTANI JUN
Target year 4th year	ear students or above <b>Number of c</b>	redits 2	Yea	r/semesters	2023/First semester
Days and periods Fri.1	Class style Lec	cture		Language of instruction	Japanese
[Overview and pu	Irpose of the course]				
This course covers m	icrofabrication technology for	MEMS as w	ell as sei	niconducors.	
[Course objective	es]				
[Course schedule	e and contents]				
,1time, ,2times, ,3times, ,2times, ,2times, ,2times, ,1time, <b>[Course requirem</b> None	nents]				
	ods and policy]				
[Textbooks]					
[References, etc.]					
(Reference boo	ks )				
			(	Continue to マイク	フロ加工学(機エネ) <b>(2)</b>

マイクロ加工学(機エネ)(2)

# [Study outside of class (preparation and review)]

(Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

# [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

Course number       U-ENG25 45145 LJ77         Course title (and course fille in BrS子宙工学演義(字) Eigineering Exercise in Aeronautics and Astronautics and department Figliesh)       Instructor's name, bp title, and department for dissort, ERGUCH (ROUJI)       Graduate School of Engineering ALL STAFF Graduate School of Engineering Professor, ERGUCH (ROUJI)         arget year       4th year students or above Tue.3.4       Class style       Lecture       Impartment 2       Q023/First semester         Asys and periods       Tue.3.4       Class style       Lecture       Impartment 2       Impartment 2       Q023/First semester         Qoverview and purpose of the course]       Impartment 2       Impartment 2       Impartment 2       Impartment 2       Impartment 2       Impartment 2         Course objectives]       Impartment 2       Impartmen							未更新
Course title (and course intite in Engineering Enginesity)              interring Exercise in Aeronautics and Astronautics in the in enginesity)              Instructor's engineering exercise in Aeronautics and Astronautics in the in engineering exercise in exercise in exercis in exercis in exercis in exercise in exercise in exercise in e	Course number	U-ENG25 451	45 LJ77				
arget year #th year students or above Number of credits 2 Year/semesters 2023/First semester   Days and periods Tue.3.4 Class style Lecture argagin fistudati Japanese   [Overview and purpose of the course]	Course title (and course title in Engineerin English)	<b>宙工学演義(宇</b> 〕 ng Exercise in Aeronau	) itics and Astronautics	Instructor's name, job ti and departn of affiliation	tle, A	Graduate Sch ALL STAFF Graduate Sch Professor,ER	ool of Engineering ool of Engineering IGUCHI KOUJI
Days and periods Tue.3,4 Class style Lecture Inguaged instructor Japanese   [Overview and purpose of the course]     [Course objectives]     [Course schedule and contents]     None     [Course requirements]     [Vone     [Evaluation methods and policy]     [References, etc.]   ( Reference books )	Target year 4th ye	ear students or above N	lumber of cred	its 2	Year/	semesters	2023/First semester
[Overview and purpose of the course] [Course objectives] [Course schedule and contents] [Course requirements] [Course requirements] [Course requirements] [Course requirements] [Textbooks] [References, etc.] ( Reference books )	Days and periods Tue.3	3,4 Class s	style Lecture			Language of instruction	Japanese
[Course objectives] [Course schedule and contents] [Course requirements] None [Evaluation methods and policy] [Textbooks] [References, etc.] ( Reference books )	[Overview and pu	Irpose of the co	ourse]				
[Course objectives] [Course schedule and contents] [Course requirements] [Course require							
[Course schedule and contents] [Course requirements] None [Evaluation methods and policy] [Textbooks] [References, etc.] ( Reference books )	[Course objective	es]					
[Course schedule and contents] [Course requirements] None [Evaluation methods and policy] [Textbooks] [References, etc.] ( Reference books )							
[Course requirements] None [Evaluation methods and policy] [Textbooks] [References, etc.] ( Reference books )	[Course schedule	e and contents]					
[Course requirements]         None         [Evaluation methods and policy]         [Textbooks]         [References, etc.]         ( Reference books )	,,						
[Course requirements]         None         [Evaluation methods and policy]         [Textbooks]         [References, etc.]         ( Reference books )							
None     [Evaluation methods and policy]     [Textbooks]     [References, etc.]   ( Reference books )	[Course requirem	nentsl					
[Evaluation methods and policy] [Textbooks] [References, etc.] ( Reference books )	None						
[Textbooks] [References, etc.] ( Reference books )	[Evaluation mether	ods and policy					
[Textbooks] [References, etc.] ( Reference books )							
[References, etc.] (Reference books)	[Textbooks]						
[References, etc.] (Reference books)							
( Reference books )	[References, etc.]						
	( Reference boo	oks)					
·					c	ontinue to 航空	宇宙工学演義(宇) <b>(2)</b>

航空宇宙工学演義(宇)(2)

# [Study outside of class (preparation and review)]

(Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

## [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

Course nu	umbe	er	U-EN	U-ENG25 35147 LJ75										
Course title (and course title in English)	固亿 Con	本物性 idens	性論(材エネ) sed Matter Physics Instructor's name, job title, and department of affiliation Graduate School of Engineer Associate Professor, TABATA YOS								nool of Engineering AKAMURA HIROYUKI nool of Engineering ssor,TABATA YOSHIKAZU			
Target yea	r	3rd ye	ear students	or above	Number	of cred	its	2	Year	r/semesters	2023/Second semester			
Days and periods         Fri.3         Class style         Lecture         Language of instruction         Japanese											Japanese			
[Overview	and	d pu	rpose o	of the	course]									
Basic concept of magnetic and superconducting properties of matters.														
[Course objectives]														
Understandi	ng o	f bas	ic conce	pt of n	nagnetic and	d superc	ond	lucting p	ropert	ties of matters				
[Course s	che	dule	and co	ontent	s]									
paramagneti anisotropy, 1 flux quantiza Assessment, [Course re None [Evaluatio	sm,	irem	ation pro gin of su Assessme	sm, an cess, N percon nt	Aeisner effe Iductivity, J	letism, r ect, type losephsc	-1 a	ffect, SC	2 sup 2 UID,	etc.	y, London equation,			
Evaluation v	vill t	be ba	sed on a	final e	examination	1.								
[Textbook	s]													
Not used														
[Referenc	es, (	etc.]												
(Reference books) S. Blundel <sup>©</sup> Magnetism in Condensed Matter (Oxford Master Series in Physics) <sup>』</sup> (Oxford University Press ISBN:0198505914 C. Kittel <sup>©</sup> Introduction to Solid State Physics <sup>』</sup> (Wiley) ISBN:9780471415268														
[Study ou	tsid	e of	class (	prepa	ration and	d revie	w)]							
Basics of qu	antu	m m	echanics	and st	atistical me	echanics	is r	necessar	у.					
( Other in	forn	natio	on (offic	e hou	urs, etc.) )									
*Please visit	t KŪ	LAS	SIS to fin	d out a	bout office	hours.								
						未更新								
---	--	---	---	--	--	---								
Course number	U-ENG25 35148 LJ57	U-ENG2	5 35148	LJ75										
Course title (and course 量子物 title in Introduc English)	性基礎論(原) ction to Solid State Physics	In: na an of	structor's me, job ti d departn affiliation	tle, nent	Graduate Sch Associate Pro Graduate Sch Senior Lectur	nool of Engineering ofessor,MATSUO JIROU nool of Engineering rer,SEKI TOSHIO								
Target year 3rd y	ear students or above <b>Number c</b>	of credits	2	Year	/semesters	2023/Second semester								
Days and periods Fri.1	Class style	Lecture			Language of instruction	Japanese								
[Overview and pu	Irpose of the course]													
solid state physics is microscopic perspect foundation for under to allow students to s lectures give explana solid state physics.	tive through atoms, molecular standing the properties of in study the behavior of lattice ations based on quantum the	les, and so mportant n s and elec eory to pro	forth. T naterial s trons, wh	he disc substan nich fo lents v	cipline also fo ces applied ir rm the basis o vith an unders	rms the academic n engineering. In order of solid state physics, tanding of the basics of								
[Course objective	es]													
The purpose of lectur particles (the most in perspective.	res is to help students deepen nportant components of soli	en their un id state ph	derstand ysics) int	ing of teract v	how photons, with matter fro	electrons, and om a microscopic								
[Course schedule	e and contents]													
Introduction, 1 session are reviewed Crystal structure, 3 se Free electron theory, surface Valence theory, 2 ses Phonons and photons Semiconductors, 1 se electron conduction Junction theory, 2 se Confirmation of learn solid-state physics ba	on: basic components of sol essions: crystal, reciprocal 1 3 sessions: wave function a ssions: Bloch theorem, Brill s, 2 sessions: Kramers?Kron ession: bandgap, electrons a ssions: surface electron con ning achieved, 2 sessions: T ased on quantum mechanics	lid state ph lattice, uni and energy louin zone nig relation and holes, i nduction, F The degree s is confirr	t lattice state of state of Laue ec ns, Drude intrinsic P-N junct to which ned.	ch as c a one- quatior e theor semico ion, M h stude	crystal structu dimensional f ns, diffraction ry, electron ga onductors, imp r-S junction ents have succ	re and crystal types, free electron, Fermi , and structural factors s, plasmons purity doping, and ressfully learned about								
[Course requirem	nents]			-										
It would be preferabl	le for students to take teach	ing session	ns in soli	d-state	physics in ad	vance.								
[Evaluation meth	ods and policy]													
Evaluation is given b	based on reports (20 marks)	and an ex	aminatio	n (80 1	narks).									
[Textbooks]														
Others; outlines are o	distributed during teaching	sessions												
				0	Continue to 量子	*物性基礎論(原) <b>(2)</b>								

## 量子物性基礎論(原)(2)

#### [References, etc.]

#### (Reference books)

Others; Kittel, C., (translated by Uno, Y., Tsuya, N., Shinseki, K., Morita, A., Yamashita, J.), Kitteru: Kotai butsurigaku nyuumon (jouka), (Maruzen Publishing, 2005) ibid {} {BB02040691}, Hardcover version isbn {} {9784621076569}

## [Study outside of class (preparation and review)]

Students must study assignments properly.

When appropriate, students are given report assignments and are required to submit them along with review lecture materials.

## (Other information (office hours, etc.))

Course nu	umber		U-ENC	G25 251	50 LJ28	U-EN	G25	5 25150	LJ57	U-ENG25 2	5150 LJ77
Course title (and course title in English)	原子 Introc	核工: ductio	学序論 on to Nu	1(原 uclear E	) Ingineerir	ng 1	Inst nan and of a	tructor's ne, job tit I departm affiliation	tle, nent	Graduate Sch ALL STAFF Graduate Sch Professor,SA	nool of Engineering nool of Engineering SAKI TAKAYUKI
Target yea	<b>r</b> 21	nd year	r students o	r above N	lumber	of cred	lits	2	Year	/semesters	2023/First semester
Days and perio	ods Mo	on.2		Class	style	Lecture	e			Language of instruction	Japanese
[Overview	and	purp	pose of	f the c	ourse]						
Study of bas from the phy fission react	ic con /sicocl ions.	ncepts hemi	s necess ical prop	ary for perties of	understar of atoms,	nding the nuclei, a	e pri and i	inciples radiation	of var 1 to the	ious nuclear e e generation a	engineering studies nd use of energy by
[Course o	bject	ives	]								
The course on nuclear engi issues.	objecti neerin	ive is 1g, an	to undend to und	erstand derstand	the link b d the lates	etween st advan	basi cem	c scienc ents ma	e and de in t	the latest rese basic and appl	arch in the field of ied research and future
[Course s	ched	ule a	and co	ntents	]						
Introduction 1) Discovery 2) History o 3) Basics of 4) Interactio 5) Detection 6) Generatic 7) Industrial Energy gene 8) Energy si 9) Basics of 10) Reactor 11) Reactor 12) Reactor 13) Reactor 14) Viewpoi 15) Feedbac	to Ra y of ra f radia radiat n with of rac on of ra uses of ration tuation reactor select: select: select: nts on k; con	adiation adiation ation n subsection diation adi	on 1 on stances on ion diation utilizati l nuclean ysics oresent oast next gene lear ene ation of	on 1 r power eration rgy util learnin	reactor ization ar g achieve	nd devel ement	opm	nent			
						· <b></b> ·			0	Continue to 原子	核工学序論1(原) <b>(2)</b>

# 原子核工学序論1(原)(2)

# [Course requirements]

N/A

# [Evaluation methods and policy]

Grading is based on the score of the periodic evaluations. Students will be tested on basic knowledge and understanding of atoms, nuclei, radiation, quantum computation, etc. discussed in each lecture.

## [Textbooks]

Other materials are not specified. Handouts, etc. will be distributed during lectures.

[References, etc.]

(Reference books)

N/A

# [Study outside of class (preparation and review)]

Review mainly the contents of each lecture and the exercises during the lecture is advisable.

## (Other information (office hours, etc.))

Attend as needed. Some materials may be omitted or added depending on the number of classes in the relevant year. Attending Introduction to Nuclear Engineering 2 at the same time as this course is desirable.

Course num	ber	U-EN	G25 25	5151 LJ28	U-EN	G25	5 25151	LJ57	U-ENG25 2	5151 LJ77
Course title (and course 原 title in Int English)	子核 croduc	工学序論 ction to N	2(	₹) Engineerir	ng 2	Inst nar anc of a	tructor's ne, job ti I departn affiliation	tle, nent	Graduate Scl ALL STAFF Graduate Scl Professor,SA	nool of Engineering nool of Engineering SAKI TAKAYUKI
Target year	2nd y	ear students o	or above	Number	of cred	lits	2	Yea	r/semesters	2023/Second semester
Days and periods	Mon.	2	Class	style	Lectur	e			Language of instruction	Japanese
[Overview ar	ո <mark>ժ թւ</mark>	irpose o	fthe	course]						
Study of the fun necessary for u	ndame nders	entals of r tanding th	adiatio e prin	on propertic ciples of va	es and th arious n	heir ucle	control, ar engin	and e eering	nergy utilizati studies.	ion and management,
[Course obje	ective	es]								
The course obje of nuclear engin future issues.	ective neerir	is to undeng, and to	erstand unders	the association the la	iation be atest adv	etwe vance	en basic ements	c scien made 1	te and the lat to basic and a	est research in the field pplied research and
[Course sch	edule	e and co	ntent	s]						
Introduction to 1) Radiation bio 2) Medical app 3) Effects of rad 4) Safe use of r 5) Radiation-re New developm 6) Cutting-edge Energy generat 7) History and r 8) Fusion reacto 9) Power reacto 10) Ensuring sa 11) Technical e 12) Radiation in 13) Nuclear fue 14) Reprocessin 15) Feedback; of	Radia ology licatic diatio adiati lated ents in e infor ion ar funda or dev or syst afety ethics n the o el cycl ng ano confir	ation 2 on of radia n on the h on laws and n n quantum rmation te nd utilizat: mentals o velopment tems environme le d geologic mation of	ation numan regulat n theor cchnolo ion 2 f nucle c ent cal disp learni	body tions <sup>Ty</sup> Dgy ear fusion posal ng achieve	ement					
								(	Continue to 原子	 核工学序論2(原) <b>(2)</b>

# 原子核工学序論2(原)**(2)**

# [Course requirements]

N/A

# [Evaluation methods and policy]

Grading is based on the score of the periodic evaluations. Students will be tested on basic knowledge and understanding of atoms, nuclei, radiation, quantum computation, etc. discussed in each lecture.

## [Textbooks]

Other materials are not specified. Handouts, etc. will be distributed during lectures.

[References, etc.]

(Reference books)

N/A

## [Study outside of class (preparation and review)]

Review mainly the contents of each lecture and the exercises during the lecture is advisable.

## (Other information (office hours, etc.))

Attending Introduction to Nuclear Engineering 1 is desirable. Exercises and report tasks will be assigned as necessary. Some materials may be omitted or added depending on the number of classes in the relevant year.

											未更新
Course nu	ımbe	ər	U-ENG	G25 3:	5152 LJ71	U-EN	G25	35152	LJ77		
Course title (and course title in English)	流体 Flui	\$熱工 d Flo	_学(原 ww and H	) eat Tr	ansfer		Inst nam and of a	ructor's ne, job tit I departm Iffiliation	tle, 1ent	Graduate Sch Professor,YC	100l of Engineering DKOMINE TAKEHIKO
Target yea	r	3rd yea	ar students c	or above	Number o	of cred	its	2	Year	/semesters	2023/Second semester
Days and perio	ods N	/Ion.2	2	Class	s style	Lecture	e			Language of instruction	Japanese
[Overview	and	d pur	rpose o	f the	course]					<u> </u>	
This lecture and turbulen are to unders through the reactor as a t	prov it cor stand unde typic	rides to nvection I the lowerstand the lowerstand	the follow ive heat to basic the dings of aergy con	wing s transfe ory of the m versic	subjects: the er, phase ch fluid dynai echanisms o on system w	ermal ra ange ph mics, the of heat t vill be di	diati ieno erme trans iscus	ion, stea mena (b odynam sfer; esp ssed inc	idy and oiling ics, he ecially luding	d unsteady he and condensa at transfer an thermal hydr a safety engi	at conduction, laminar ation). The main goals d their allocation raulics in a nuclear neering point of view.
[Course o	bjec	tive	s]								
In order to u thermodynai	nder mics	stand, heat	l the relat t transfer	tion be and the	etween heat heir allocati	t and flu ion. It is	iid b ver	ased on y impor	the ba tant to	sic theory of	fluid dynamics,
[Course s	che	dule	and co	ntent	:s]						
,1.0times, ,1.0times, ,2.0times, ,4.0times, ,1.0times, ,5.0times, , 1.0times,											
[Course re	equi	reme	ents]								
None											
[Evaluatio	n m	etho	ods and	polic	;y]						
Evaluation b	ased	l on tl	he writte	n exai	mination, bu	ut it is a	lso r	ating a	studen	t#039s class j	performance.
[Textbook	s]										
[Reference	es, e	etc.]									
(Referer	nce	booł	ks)								
[Study out	tsid	e of (	class (p	orepa	ration and	d revie	w)]				
(Other inf	form	natio	n (offic	e hou	urs, etc.) )						

	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1									
Course n	umber	U-ENG25 3.	5153 LJ71							
Course title (and course title in English)	伝熱工 <sup>:</sup> Heat Tra	学(機) ansfer			Instructor's C name, job title, F and department C of affiliation			Graduate Sch Professor,IW Graduate Sch Associate Profe	Graduate School of Engineering Professor,IWAI HIROSHI Graduate School of Engineering Associate Professor,TATSUMI KAZUYA	
Target yea	ı <b>r</b> 3rd y	ear students or above	Number o	of cred	its	2	Year	/semesters	2023/Second semester	
Days and peri	ods Fri.1	Class	s style	Lecture	e			Language of instruction	Japanese	
[Overview	<i>ι</i> and pι	Irpose of the	course]							
techniques, conduction, With respect and the boil we will disc	that is he we will o ct to conv ing and c cuss the b	on the heat trans eat conduction, c discuss the stead vective heat trans condensation transpasic theory.	ster phenom convection l dy-unsteady isfer, we wi nsfer accon	heat trai phenoi ll discus npanyin	nsfe men ss si g pł	r, and th on and th ngle-ph nase trar	on of f nermal the the ase for nsition	radiation. Wi ory of extend rced convections. With respect	th respect to heat ed surface heat transfer. on/natural convection et to thermal radiation,	
[Course o	bjective	es]								
Provide bas heat transfe	ic knowle r, therma	edge and deeper l radiation).	n understan	ding of	heat	t transfe	r phen	omena (heat d	conduction, convective	
[Course s	chedule	e and content	s]							
(1) General info insulation to engineering (2-4) Heat conductivity basic case e	ormation: chniques and the l ction: Ex y and Fou	: Based on multi s, and temperation basic mechanism plain the basics urier 's law, and Explain therms	iple exampl ure control ns of heat to of heat con d the deriva	les of en of equip ransfer p duction ation of p	pher pher pher phe	y conve nt, expla nomena. enomena equatior	rsion r ain the a, spec a of he	equiring heati importance of ifically heat f at conduction	ing, cooling, and of heat transfer lux, thermal , with reference to eat conduction	
resistance ir	1 flat plat	es, pipes, etc., the	he theory of	f extend	led s	surfaces	(fins),	, and so on.	eat conduction	
Basic inforr Explain dim and Rayleig transfer.	nation on Iensionle h numbe	a convective hears ss numbers such r. Derive the mo	t transfer: H n as Prandtl omentum ar	Formula number nd energ	rize r, N gy eo	the gov usselt m quations	verning umber, s for th	g equations of , Stanton num e boundary la	flow in heat transfer. ber, Grashof number, yer flow and heat	
(6-9) Convective as well as go boundary la transfer, exp plate. (10, 11)	heat tran eneral inf yer flow plain heat	sfer without pha formation. As ex over a flat plate t transfer of flov	ase change: xamples of accompany vs within tu	Explair external ying hea bes. Als	n spo l flo at tra so, e	ecific ex w heat t ansfer. A explain 1	ample ransfe Also, a natural	es of forced co r, explain lam s an example convection a	onvective heat transfer, inar and turbulent of internal flow heat long a vertical heated	
Convective boiling curv and the effe	heat tran 'e in poo cts of var	sfer accompany I boiling and nu rious factors tha	ing phase c cleate boili t affect nuc	hanges: ng, tran leate bo	Wi sitic oilin	th respe on boilir g heat tr	ct to b ng, filn ransfer	oiling heat tra n boiling heat and methods	nsfer, explain the transfer mechanisms, to enhance heat	
							C	Continue to	云熱工学(機) <b>(2)</b>	

# 伝熱工学(機)**(2)**

transfer. With respect to condensation heat transfer, explain the difference between dropwise condensation and film condensation, phenomena in condensation interfaces, and the Nusselt solution in vertical plate film condensation.

(12-14)

Radiation heat transfer: Discuss black bodies and gray bodies, Kirchhoff 's law, Planck 's law, and Wien 's displacement law, Stefan-Boltzmann 's law, radiation transfer between black body surfaces and radiation in actual surfaces, and the properties of radiation in gases.

(15)

Confirmation of learning attainment.

#### [Course requirements]

Students are required to have completed Thermodynamics 1, Thermodynamics 2, Fluid Dynamics 1, and Fluid Dynamics 2.

## [Evaluation methods and policy]

A final examination will be held. In-class quizzes and reports will be factored in.

#### [Textbooks]

Not used

#### [References, etc.]

(Reference books)

# [Study outside of class (preparation and review)]

Students are required to have completed Thermodynamics 1, Thermodynamics 2, Fluid Dynamics 1, and Fluid Dynamics 2.

#### (Other information (office hours, etc.))

The order of classes listed above and their timing may differ depending on the year.

											未更新
Course nu	ımbe	er U	-ENG2	25 35154 L	J75						
Course title (and course title in English)	材料 Fund	↓基礎学 damental	2(エ ls of Ma	ネ) aterials 2			Inst nar and of a	tructor's ne, job ti I departn offiliation	tle, nent	Graduate Sch Associate Profes	nool of Energy Science ssor,OKUMURA HIDEYUKI
Target yea	r	3rd year stu	idents or a	ibove <b>Num</b> l	ber (	of cred	its	2	Year	/semesters	2023/First semester
Days and perio	ods V	Ved.2	С	lass style	9	Lecture	e			Language of instruction	Japanese
[Overview	and	l purpo	se of t	the cours	se]						
[Course o	bjec	tives]									
[Course s	ched	dule an	d cont	tents]							
,3times,				-							
,2times,											
,2times,											
,2times, 1time											
.1time.											
,3times,											
,1time,											
[Course re	qui	rement	s]								
None											
[Evaluatio	n m	ethods	and p	olicy]							
[Textbook	s]										
Text book ca http://www.j	an be sms.	bought .jp/	at the s	society of r	nater	rial sciei	nce,	Japan a	t Hyak	kumanben nea	r Kyoto university.
[Referenc	es, e	etc.]									
( Referer	nce	books)	1								
[Study ou	tside	e of cla	ss (pre	eparation	n and	d revie	w)]				
( Other in	orm	nation (	office	hours, et	t <b>c.)</b> )	)					
*Please visit	KU	LASIS to	o find o	out about o	office	hours.					

Course nu	umbe	r	U-ENC	G25 3:	5155 LJ71						
Course title (and course title in English)	設計 Desi	・工学 gn Er	1 ngineerir	ng 1			Inst nan and of a	tructor's ne, job tit I departm offiliation	le, ient	Graduate Sch Professor,KC Graduate Sch Professor,HI	nool of Engineering OMORI MASAHARU nool of Engineering RAYAMA TOMOKO
Target yea	r :	3rd year	r students o	r above	Number	of cred	its	2	Year	r/semesters	2023/First semester
Days and perio	ods M	lon.1		Class	s style	Lecture	e			Language of instruction	Japanese
[Overview	and	l pur	pose of	f the	course]						
10			-	_					_		
[Course o	bjec	tives	5]								
[Course s	chec	dule	and co	ntent	s]						
,1time,											
,4times,											
,3times,											
,3times,											
,2times,											
,2times,											
, Itime,											
,1ume,											
[Course re	equi	reme	nts]								
None											
[Evaluatio	on mo	etho	ds and	polic	;y]						
[Textbook	s]										
[Referenc	es, e	etc.]									
(Refere	nce k	book	<b>s</b> )								
[Study ou	tside	e of c	lass (p	repa	ration and	d revie	w)]				
( Other in	form	atio	n (office	e hou	urs, etc.) )						
*Please visit	t KUI	LASI	S to find	out a	bout office	hours.					

								未更新	
Course number	U-ENC	G25 35156 LJ71							
Course title (and course 設計工 title in Design English)	学 2 Engineerir	ng 2		Inst nan and of a	ructor's ne, job tit I departm iffiliation	tle, nent	Graduate School of Engineering Professor,KOMORI MASAHARU Graduate School of Engineering Professor,MATSUBARA ATSUSHI Graduate School of Engineering Professor,NISHIWAKI SHINJI		
Target year 3rd	year students o	r above <b>Number</b> (	of cred	its	2	Year	/semesters	2023/Second semester	
Days and periods Tue.	2	Class style	Lecture	e			Language of instruction	Japanese	
[Overview and p	urpose of	f the course]							
[Course objectiv	es]								
[Course schedul	e and co	ntents]							
,5times,									
,3times,									
,2times,									
,4times,									
,111110,									
[Course requirer	nents]								
None									
[Evaluation mether	ods and	policy]							
[Textbooks]									
[References, etc	.]								
( Reference bo	oks)								
					. – –	0	Continue to	設計工学 2 <b>(2)</b>	

# 設計工学 2 **(2)**

# [Study outside of class (preparation and review)]

## (Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

# [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

(3) Details of practical classes delivered based on instructors ' practical work experience

										未更新
Course nu	umber	U-ENG	25 3515	7 EJ28						
Course title (and course title in English)	エネル= Design Practice	ギー応用コ and Experiments fo	二学設計 r Applied Energy	演習・ Science and	<b>実験 1</b> Engineering 2	Instructor's name, job title, and department of affiliation		tle, nent	Graduate Sch Associate Profes Graduate Sch Associate Pro Graduate Sch Assistant Profe Graduate Sch Professor,IM Graduate Sch Professor,KA Graduate Sch Associate Profess Graduate Sch	nool of Energy Science ssor,OKUMURA HIDEYUKI nool of Energy Science fessor,ABE MASATAKA nool of Energy Science essor,IKENOUE TAKUMI nool of Energy Science (ATANI SHIYOUJI nool of Energy Science fessor,OGAWA TAKAYA nool of Energy Science SHIWAYA YOSHIAKI nool of Energy Science sor,KINOSHITA KATSUYUKI nool of Energy Science or,HASEGAWA MASAKATSU nool of Energy Science ofessor,HACHIYA KAN nool of Energy Science fessor,HORIBE NAOTO nool of Energy Science of,MATSUMOTO KAZUHIKO nool of Energy Science or,MATSUMOTO KAZUHIKO nool of Energy Science fessor,MIYAKE MASAO nool of Energy Science
Target yea	<b>r</b> 3rd ye	ear students or	above <b>Nu</b>	mber	of cred	its	3	Year	/semesters	2023/First semester
Days and perio	odsWed.3	,4,Thu.3,4 <b>C</b>	Class st	yle	Experi	men	t		Language of instruction	Japanese
[Overview	and pu	irpose of	the cou	urse]						
[Course o	bjective	es]								
[Course s	chedule	and con	tents]							
,6times, ,6times, ,6times, ,6times,								<sub>c</sub>	ontinue to エネルギ	- 応用工学設計演習・実験 1 <b>(2)</b>

エネルギー応用工学設計演習・実験1(2)

# [Course requirements]

None

[Evaluation methods and policy]

[Textbooks]

[References, etc.]

(Reference books)

[Study outside of class (preparation and review)]

(Other information (office hours, etc.))

						未更新
Course number	U-ENG25 35158 EJ53	U-ENC	G25 35158	EJ57	U-ENG25 3	5158 EJ77
Course title (and course 原子核] title in Nuclear English)	工学実験 1 Engineering Laboratory 1	1	Instructor's name, job tit and departm of affiliation	tle, nent	Graduate Sch ALL STAFF Graduate Sch Associate Profe	nool of Engineering nool of Engineering essor,TAISHI KOBAYASHI
Target year 3rd y	rear students or above Number o	of credi	<b>ts</b> 3	Year	/semesters	2023/First semester
Days and periods Thu. I	1,2,3,4 Class style	Experin	nent		Language of instruction	Japanese
[Overview and pu	urpose of the course]					
electrical engineering engineering, as well specific to nuclear er training as well as pr processing experime	g, mechanical engineering, a as basic proficiency with sta ngineering. In addition, stud occedures for the safe handli ntal data, and how to prepar	and mate andards lents wil ing of ra re scient	erials engir related to r l study exp dioisotopes ific reports	neering adiation periments and r	g) that form the second se	the basis of nuclear im beam technologies es through practical erators, methods for
[Course objective	es]					
Cultivate familiar	rity with experimental proce	edures ar	nd a sense o	of engi	neering best p	practices.
<ul> <li>Acquire basic kno application.</li> </ul>	owledge and skills related to	o science	e and engin	eering	with a mind	towards practical
• Cultivate the abili	ity to acquire and utilize bas	sic know	ledge and	techno	ology related t	o nuclear engineering.
• Learn how to con-	duct experiments while con-	sidering	personal a	ind env	vironmental sa	afety.
• Cultivate the abili	ity to work effectively, inde	pendent	ly, and con	tinuou	sly on variou	s tasks.
[Course schedule	e and contents]					
Course will cover the	e following themes. Some o	of the the	emes also s	erve a	s new instruct	ion and training
regarding the handlir The order of lectures change.	ng of radioisotopes. differs for each experiment	tal group	p, and the c	content	t of correspon	ding exercises may
Lecture 1: Overview learning instructions	of experiments: Provide an and precautions, etc. will be	i overvie e given a	ew of each as necessar	experi 'y.	mental task, to	ext distribution, pre-
Lecture 2: Basics of as exercises to learn	creating engineering reports the basics of creating experi	s: Lectur imental	re will focu reports.	is on c	reating experi	imental reports, as well
Lecture 3: Radioactiv RIs. Students will stu	ve isotope (RI) safety traininudy safe procedures for hand	ng semin dling nu	nar: Studen clear fuel r	ts will nateria	learn safe pro lls.	ocedures for handling
Lecture 4: Plan draft	ing: Exercises and lectures of	on basic	aspects of	plan c	lrafting.	
				(		

# 原子核工学実験1**(2)**

Lecture 5: Equipment safety training: Students will learn about safety when handling machine tools such as drilling machines and lathes.

Lecture 6: Electronic safety training: Students will assemble various circuits and learn safe and reliable circuit manufacturing techniques.

Lecture 7: -ray absorption: Students will learn about -ray identification using semiconductor detectors and energy absorption, range, and straggling using -ray-emitting substances.

Lecture 8: Absorption of and -rays: Students will study procedures for the safe handling of RIs through experiments on energy absorption by and -ray-emitting substances.

Lecture 9: X-ray diffraction: Using a powder X-ray diffractometer, students will learn the basic properties of X-rays and gain an understanding of the relationship between diffraction patterns and crystal structures.

Lecture 10: Atmospheric PIXE/PIGE analysis: Students will discharge a proton beam into the atmosphere and observe its range. In addition, the characteristic X-rays and -rays generated by various irradiating materials will be measured and trace element analysis will be performed as a study of the properties of ion beams and their use.

Lecture 11: Circuit meter training: Students will learn the operating principles and usage of analog and digital testers.

Lecture 12: Study of oscilloscopes and linear circuits: Students will learn how to use an oscilloscope, an essential tool for observing pulse waveforms as well as how to transmit pulses when they enter the network.

Lecture 13: Analog/digital circuits: Students will learn about the basics of amplifiers and digital circuits with semiconductor elements by actually creating circuits.

Lecture 14: Electron beams/vacuums: Students will focus an electron beam by electric and magnetic fields to learn the functions of electrostatic and magnetic lenses and understand the fundamental principles of vacuum technology.

Lecture 15: Report check: Confirmation of the content of students ' submitted reports and provision of guidance regarding resubmission of deficient reports to confirm learning achievement.

#### [Course requirements]

N/A

#### [Evaluation methods and policy]

Students will prepare a report for each task, and performance will be evaluated on a scale of 1 to 3 with respect to the degree of achievement of each learning objective, and the total score is converted into a score out of 100.

Note that completing all assignments and submitting reports is a prerequisite for receiving credit.

Reports submitted late may be penalized, and messy or incomplete reports may require correction and resubmission. \_\_\_\_\_\_ Continue to 原子核工学実験 1 (3)

# 原子核工学実験 1 **(3)**

# [Textbooks]

Texts and reference materials will be distributed for each experimental theme.

#### [References, etc.]

#### (Reference books)

Other materials will be introduced as needed for each experimental theme.

#### [Study outside of class (preparation and review)]

Submit reports on all experimental themes within the deadline.

In addition, follow the instructions in the experiment outline description for each experiment theme.

## (Other information (office hours, etc.))

The method of contacting the faculty in charge of each experimental theme will be given in the instructional material for each experiment.

Taking this course together with Nuclear Engineering Experiment 2 is desirable.

\*Please visit KULASIS to find out about office hours.

#### [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

・RI主任者【工学部の事業所(宇治)におけるRI管理の実務経験】

(3) Details of practical classes delivered based on instructors ' practical work experience ・ RI管理の経験に基づく実務的な教育が行われている。

									未更新
Course numb	ber	U-ENG25 3	5159 SJ28						
Course title (and course title in English)	ネル= n Practice	ギー応用工学 and Experiments for Applie	设計演習・ d Energy Science and	<b>実験 2</b> Engineering 2	Inst nan and of a	ructor's ne, job ti I departn Iffiliation	tle, nent	Graduate Sch Associate Profe Graduate Sch Associate Pro Graduate Sch Associate Pro Graduate Sch Assistant Prof Graduate Sch Professor, IM Graduate Sch Professor, KA Graduate Sch Associate Profess Graduate Sch	hool of Energy Science ssor,OKUMURA HIDEYUKI hool of Energy Science fessor,ABE MASATAKA hool of Energy Science ofessor,HACHIYA KAN hool of Energy Science essor,IKENOUE TAKUMI hool of Energy Science IATANI SHIYOUJI hool of Energy Science fessor,OGAWA TAKAYA hool of Energy Science Sor,KINOSHITA KATSUYUKI hool of Energy Science sor,KINOSHITA KATSUYUKI hool of Energy Science or,HASEGAWA MASAKATSU hool of Energy Science ofessor,HORIBE NAOTO hool of Energy Science Sor,MATSUMOTO KAZUHIKO hool of Energy Science fessor,MIYAKE MASAO hool of Energy Science
Target year	3rd ye	ear students or above	Number	of cred	its	3	Yea	r/semesters	2023/Second semester
Days and periods∛	Wed.3	,4,Thu.3,4 <b>Clas</b>	s style	Semina	ar			Language of instruction	Japanese
[Overview an	nd pu	rpose of the	course]						
[Course obje	ctive	es]							
	,							Continue to エネルギ	ー応用工学設計演習・実験 2 <b>(2)</b>

## エネルギー応用工学設計演習・実験2(2)

## [Course schedule and contents]

,6times,

,6times,

,6times, ,6times,

,1time,

#### [Course requirements]

None

[Evaluation methods and policy]

[Textbooks]

# [References, etc.]

(Reference books)

[Study outside of class (preparation and review)]

## (Other information (office hours, etc.))

						未更新						
Course number	U-ENG25 35160 SJ53	U-ENC	625 35160	SJ57	U-ENG25 3	5160 SJ77						
Course title (and course title in English)	工学実験 2 Engineering Laboratory 2	1	Instructor's name, job tit and departm of affiliation	tle, nent	Graduate Sch ALL STAFF Graduate Sch Associate Profe	nool of Engineering nool of Engineering essor,TAISHI KOBAYASHI						
<b>Target year</b> 3rd y	rear students or above <b>Number</b>	of credi	<b>ts</b> 3	Year	/semesters	2023/Second semester						
Days and periods Thu.	1,2,3,4 Class style	Seminar	r		Language of instruction	Japanese						
[Overview and pu	urpose of the course]											
electrical engineering engineering, as well specific to nuclear er practical training as v methods for processi	g, mechanical engineering, as basic proficiency with st ngineering. In addition, stud well as procedures for the s ing experimental data, and 1	material tandards dents wil safe hand how to p	s engineeri related to r l study pra- lling of rad: repare scie	ng) that adiatic ctical e ioisoto ntific r	at form the ba on and quantu experimental popes and radia reports.	sis of nuclear m beam technologies procedures through tion generators,						
[Course objective	es]											
Cultivate familiar	ity with experimental proce	edures ar	nd a sense o	of engi	neering best p	practices.						
<ul> <li>Acquire basic kno application.</li> </ul>	• Acquire basic knowledge and skills related to science and engineering with a mind towards practical application.											
• Cultivate the abili	ity to acquire and utilize ba	sic know	vledge and	techno	logy related t	o nuclear engineering.						
• Learn how to con-	duct experiments while cor	nsidering	g personal a	nd env	vironmental sa	afety.						
• Cultivate the abili	ity to work effectively, inde	ependent	ly, and con	tinuou	sly on variou	s tasks.						
[Course schedule	e and contents]											
Course will cover the The order of lectures change.	e following themes. differs for each experimen	ntal group	p, and the c	content	of correspon	ding exercises may						
Lecture 1: Overview learning instructions	of experiments: Provide an and precautions, etc. will b	n overvie be given a	ew of each as necessar	experin y.	mental task, to	ext distribution, pre-						
Lecture 2: Basics of as exercises to learn	creating engineering report the basics of creating exper	ts: Lectur rimental	re will focu reports.	is on c	reating experi	mental reports, as well						
Lecture 3: Slow neut learn about the prope	tron beams: Students will n erties of neutrons and their	neasure n interactio	neutrons fro on with ma	om rad tter.	ioisotopes usi	ng a neutron counter to						
Lecture 4: Radiocher radioisotope (59Fe) a	mistry: Students will learn and solvent extraction.	how to h	andle unse	aled ra	dioactive mat	terials using						
				c	 Continue to 原	子核工学実験 2 <b>(2)</b>						

# 原子核工学実験 2 **(2)**

Lecture 5: Ion beam generation and RBS analysis: Students will learn about ion beam technology, vacuum technology, analytical principles, etc. through particle accelerator maneuvering, and will attempt Rutherford backscattering analysis as an applied experiment using ion beams.

Lecture 6: Thermofluid measurement and boiling heat transfer: Students will conduct experiments utilizing boiling to deepen understanding of boiling and critical heat flux, and to learn basic measurement methods used in thermofluid engineering.

Lecture 7: Uranium chemistry: Lectures will focus on the separation of uranium thorium radiative equilibrium solutions (ion exchange, oxidation-reduction reaction) and will perform colorimetric quantitative analysis as study of the handling of nuclear fuel.

Lecture 8: Materials testing/electron microscopy: Students will perform tensile testing on various materials and obtain basic knowledge on the strength of metallic materials by analyzing pulling speed, etc.

Lecture 9: Radiation detection: Students will attempt detection of -rays emitted from substances existing in nature by using a Ge semiconductor detector as well as the identification and quantification of emitted nuclides. Students will also deepen their understanding of radiation and radioactive materials by measuring contamination using a survey meter and by measuring the decay process of nearby radioisotopes.

Lecture 10: Nonlinear Optical Effect Lasers: Students will perform laser oscillation experiments using an optical cavity and a solid crystal as study of the basic concepts related to stimulated emission. Students will also observe the generation of secondary harmonic waves using a nonlinear optical crystal, learn about phase matching, and study the basics of optical technology.

Lecture 11: Analog/digital measurement: Students will study the characteristics of analog and digital measurements, as well as the principles of impedance matching and sampling, by actually creating circuits in practice.

Lectures 12 and 13: Simulation experiments: Students will study the basics of computer simulations, and perform a simulated experiment on radiation permeation using Excel.

Lectures 14 and 15: Report check: Confirmation of the content of students ' submitted reports and provision of guidance regarding resubmission of deficient reports to confirm learning achievement.

## [Course requirements]

N/A

#### [Evaluation methods and policy]

Students will prepare a report for each task, and performance will be evaluated on a scale of 1 to 3 with respect to the degree of achievement of each learning objective, and the total score is converted into a score out of 100.

Note that completing all assignments and submitting reports is a prerequisite for receiving credit.

Reports submitted late may be penalized, and messy or incomplete reports may require correction and resubmission.

Continue to 原子核工学実験 2 (3)

# 原子核工学実験 2 **(3)**

# [Textbooks]

Texts and reference materials will be distributed for each experimental theme.

#### [References, etc.]

#### (Reference books)

Other materials will be introduced as needed for each experimental theme.

#### [Study outside of class (preparation and review)]

Submit reports on all experimental themes within the deadline.

In addition, follow the instructions in the experiment outline description for each experiment theme.

## (Other information (office hours, etc.))

The method of contacting the faculty in charge of each experimental theme will be given in the instructional material for each experiment.

Taking this course together with Nuclear Engineering Experiment 1 is desirable.

\*Please visit KULASIS to find out about office hours.

#### [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

・RI主任者【工学部の事業所(宇治)におけるRI管理の実務経験】

(3) Details of practical classes delivered based on instructors ' practical work experience ・ RI管理の経験に基づく実務的な教育が行われている。

										未更新
Course nu	umber	U-ENG	G25 45	5161 LJ71						
Course title (and course title in English)	材料強度 Strength	度学 and Frac	ture of	f Materials		Inst nan and of a	ructor's ne, job ti I departn Iffiliation	tle, nent	nool of Engineering RAKATA HIROYUKI nool of Engineering IIMADA TAKAHIRO	
Target yea	<b>r</b> 4th ye	ear students o	or above	Number o	of cred	lits	2	Year	/semesters	2023/First semester
Days and perio	ods Thu.2	2	Class	style	Lecture	e			Language of instruction	Japanese
[Overview	and pu	irpose o	f the o	course]						
[Course o	bjective	s]								
[Course s	chedule	and co	ntent	s]						
,2times, ,2times, ,3times, ,1?2times, ,1?2times, ,1?2times, ,1?2times, ,1?2times,										
[Course re	equirem	ients]								
None										
[Evaluatio	n meth	ods and	polic	y]						
[Textbook	s]									
[Referenc	es, etc.]									
( Referei	nce boo	<b>ks</b> )								
[Study ou	tside of	class (p	orepai	ration and	d revie	w)]				
( Other in	formatio	on (offic	e hou	rs, etc.) )	1					
*Please visit	KULAS	SIS to find	l out a	bout office	hours.					

未更新

Course nu	umber	U-ENO	G25 25	5162 LJ57	U-EN	G25	25162	LJ71	U-ENG25 2	5162 LJ77	
Course title (and course title in English)	熱力学 Thermo	1 (機宇 dynamics	:学習 1	昏奇数)		Inst nan and of a	tructor's ne, job tit I departm Iffiliation	le, ient	Graduate School of Engineering Associate Professor, TATSUMI KAZUYA		
Target yea	<b>r</b> 2nd	year students c	or above	Number	of cred	its	2	Year	/semesters	2023/First semester	
Days and perio	ods Fri.1		Class	s style	Lecture	e			Language of instruction	Japanese	
[Overview	and p	urpose o	f the	course]							
[Course o	bjectiv	es]									
[Course s	chedul	e and co	ntent	s]							
,1time,				•							
,5times,											
,2times,											
,2times,											
,4times,											
, I time,											
, i tillit,											
[Course re	equiren	nents]									
None											
[Evaluatio	on meth	ods and	polic	;y]							
[Textbook	s]										
[Referenc	es, etc.	.]									
( Referei	nce boo	oks )									
[Study ou	tside o	f class (p	orepa	ration and	d revie	w)]					
( Other in	formati	on (offic	e hou	Irs, etc.)							
*Please visit	t KULA	SIS to find	l out a	bout office	hours.						

												未更新
Course nu	umbe	er	U-EN(	G25 2	5162 LJ57	U-EN	G25	5 25162	LJ71	U-ENG25 2	5162 LJ77	
Course title (and course title in English)	熱力 Ther	]学 1 rmod <u>r</u>	(機宇 ynamics	:学社 1	<b>錉偶数</b> )		Inst nan and of a	ructor's ne, job ti I departn affiliation	tle, nent	iool of Eng AI HIROS iool of Eng issor,KISHIM	gineering SHI gineering OTO MASASHI	
Target yea	r	2nd yea	ar students (	or above	Number	of cred	lits	2	Year	/semesters	2023/Firs	t semester
Days and perio	ods F	ri.1		Clase	s style	Lectur	e			Language of instruction	Japanese	
[Overview	and	l pur	pose o	f the	course]							
[Course o	bjec	tives	s]									
[Course s	chec	dule	and co	ntent	is]							
0												
[Course re	equi	reme	ents]									
None												
[Evaluatio	n m	etho	ds and	polic	cy]							
[Textbook	(s]											
[Referenc	es, e	etc.]										
( Referei	nce k	book	( <b>S</b> )									
[Study ou	tside	e of (	class (p	orepa	ration an	d revie	w)]					
(Other in	form	natio	n (offic	e hou	urs, etc.) )	)						
*Please visit	t KUI	LASI	S to find	1 out a	bout office	e hours.						

未更新

Course nu	Course number				G25 2	25162	LJ57	U-EN	G25	25162	LJ71	U-ENG25 2:	5162 LJ77		
Course title (and course title in English)	熱力学1(エネ原) Thermodynamics 1							Instructor's name, job title, and department of affiliation				Graduate Sch Associate Professo	Graduate School of Energy Science Associate Professor, HASEGAWA MASAKATSU		
Target yea	r i	2nd ye	ear stu	dents	or above	Nu	nber	of cred	its	2	Year	/semesters	2023/First semester		
Days and peric	ods F	ri.1			Clas	s sty	/le	Lectur	e			Language of instruction	Japanese		
[Overview	and	l pu	rpo	se o	of the	cou	rse]								
In this course, Thermodynamics 1, the basic laws of thermodynamics are introduced. Also discussed are fundamental items including state changes of ideal and real gases, cycles, flow of gases, phase transformation, free energy, phase equilibrium and the phase rule, single-component phase diagrams, etc.															
[Course o	bjec	tive	es]												
Students wil thermodynar with changes	Students will gain an understanding of the meaning and significance of the first and second laws of hermodynamics, fundamental concepts for thermodynamics. Students will also be able to quantitatively deal with changes in thermodynamic quantity that accompany state changes.														
[Course se	cheo	dule	an	d co	nten	ts]									
Introduction History of th	to th ermo	nerm odyn	ody nami	1ami cs, ir	cs (1c ntrodu	class)	of var	iables a	nd u	nits use	d in th	ermodynamic	·S.		
The first law Explanation	of tl is pr	hern ovid	nody led c	nam f def	ics (2 initio	class n of l	es) neat, Q	uasi-sta	tic p	process,	specif	ic heat, enthal	py, ideal gas.		
The second l Explanation of entropy.	law c is m	of the	ermo of re	odyna versi	amics ible a	(2cland irr	asses) eversil	ole proc	ess,	Ideal cy	cle, C	arnot cycle by	videal gas, introduction		
Thermal eng Discussion i Carnot cycle	ine ( n the	[3cla se c]	isses lasse	) s wi	ll incl	ude t	he free	expans	ion/	compres	ssion o	of gas, Otto cy	cle, Brayton cycle,		
Free energy Explanation	(3cla is m	ade (	s) of fr	ee er	nergy,	Max	well e	quations	, Jo	ule-Tho	mpson	l's experiment			
Phase transfo Explanation equilibrium,	Phase transformation (2classes) Explanation is made regarding various items, including phase, first order phase transformation, metastable equilibrium, critical point, second order phase transportation.														
Confirmation Confirmation contents of t	Confirmation of extent of student learning (1class) Confirmation is made, via practice problems and exercises, of the extent that students have learned the contents of this course.														
Feedback (1	class	)									<sub>c</sub>	 Continue to 熱フ	」 力学1(エネ原) <b>(2)</b>		

# 熱力学1(エネ原)**(2)**

Based on test results, critical reviews will be made of student work.

### [Course requirements]

The fundamental calculus as taught by the Institute of Liberal Arts and Science is a prerequisite for this course.

#### [Evaluation methods and policy]

Written examination

#### [Textbooks]

Not used

#### [References, etc.]

#### (Reference books)

Thermodynamics and statistical mechanics (A. Harajima, Baifukan) (in Japanese). isbn{}{9784563021399}

#### [Study outside of class (preparation and review)]

After each class, students should spend time to review the equations and its derivations and understand the meaning.

#### (Other information (office hours, etc.))

Depending on the number of course classes scheduled for each school year and other factors, a portion of the Syllabus may be omitted, or additions may be made thereto.

											未更新
Course nu	ımbe	•r	U-EN	G25 2	5163 LJ75						
Course title (and course title in English)	材料 Ther	熱ナ rmod	]学1( lynamics	材) of Ma	aterials 1		Inst nan and of a	nool of Engineering GIMURA HIROYUKI			
Target yea	r i	2nd ye	ear students	or above	Number	of cred	its	2	Year	/semesters	2023/First semester
Days and perio	ods W	Ved.3	3	Class	s style	Lecture	e			Language of instruction	Japanese
[Overview	anc	l pu	rpose o	f the	course]						
[Course o	bjec	tive	s]								
[Course s	cheo	dule	and co	ntent	:s]						
,2times,											
,4times,											
,2times,											
,3times, 2times											
,1time,											
[Course re	equi	rem	ents]								
None											
[Evaluatio	n m	ethc	ods and	polic	cy]						
[Textbook	s]										
[Reference	es, e	etc.]									
( Referer	nce l	bool	ks)								
[Study ou	tside	e of	class (	orepa	ration and	d revie	w)]				
(Other in	form	atio	on (offic	e hoı	urs, etc.) )						
*Please visit	KU	LAS	IS to find	d out a	bout office	hours.					

										未更新			
Course nu	ımber	U-ENG	G25 25	164 LJ75		_							
Course title (and course title in English)	Course title (and course title in English) Kapping 2 (材) Thermodynamics of Materials 2 English) Kapping 2 (材) Thermodynamics of Materials 2 Kapping 2 (A) Constructor's Thermodynamics of Materials 2 Constructor's Thermodynamics of Materials 2 Constructor's Constructor's Constructor's Constructor's Constructor's Constructor's Constructor's Constructor's Constructor's Constructor's Constructor's Constructor's Constructor's Constructor's Constructor's Constructor's Constructor's Constructor's Const												
Target yea	r 2nd y	vear students o	or above l	Number	of cred	its	2	Year	/semesters	2023/First semester			
Days and peric	ods Tue.3	3	Class	style	Lecture	e			Language of instruction	Japanese			
[Overview	and pu	urpose o	f the c	course]									
[Course objectives]													
[Course schedule and contents]													
lawDirection Chemical pot chemical pot Phase diagra systems Thermodyna Standard hyd Chemical po diagram	lawDirection of system change Chemical potential,3times,Extensive and intensive variable,chemical potentialComposition-dG diagram and chemical potentialPhase rule,phase equilibriaIdeal solution,Henrian standard state, activity Phase diagrams,1time,Relationship between phase diagram and Gibbs energyInvariant reaction in binary systems Thermodynamcis for electrode and ion,2times,Electrode potential, electromotive forceStandard state for ion, Standard hydrogen electrode Chemical potential diagrams,3times,Chemical potential diagrams for ternary systemsElectrode potential-pH diagram												
[Course re	equiren	nents]											
None													
[Evaluatio	n meth	ods and	polic	y]									
[Textbook	s]												
								,	Continue to M	N····································			
								, c		· · · · · · · · · · · · · · · · · · ·			

材料熱力学2(材)**(2)** 

# [References, etc.]

(Reference books)

[Study outside of class (preparation and review)]

(Other information (office hours, etc.))

Course nu	ımbe	er	U-EN	G25 35	165 LJ75							
Course title (and course title in English)量子無機材料学1(材) Electronic Structures of Inorganic Materials 1Instructor's name, job title, and department of affiliationGraduate School of Engineering Professor, TANAKA ISAO											nool of Engineering NAKA ISAO	
Target yea	r :	3rd yea	r students	or above 1	Number	of cred	its	2	Year	/semesters	2023/First semester	
Days and perio	ods T	hu.2		Class	style	Lecture	e			Language of instruction	Japanese	
[Overview and purpose of the course]												
Electron the structure and introduction in general.	Electron theory is essential for fundamental understanding of the relationship among properties, crystal structure and chemical composition in wide variety of inorganic crystals. This course provides an introduction to the basic electron theory to be used to describe the electronic structures of inorganic materials in general.											
[Course o	bjec	tives	5]									
This course structures of	provi inor	ides a ganic	n introc materia	luction als in ge	to the basi eneral.	ic electro	on tl	heory to	be use	ed to describe	the electronic	
[Course s	chec	dule	and co	ontents	\$]							
Introduction Electronic st Electronic st molecules, c Electronic st 1D chain of Application materials sci Assessment	to quartering to quartering to quartering to quartering to the second se	uantu ires o ethod ire of ical b ires o ogen ateria astery	im theor of isolate l, electro simple ondings of crysta atoms, ils scien y of the	y,3time ed atom on spin molecu s ls,4time Bloch t ce,1tim course	es,Descript s,3times,h iles,3times es,electron heorem, ba e,Density content,1t	tion of e ydroger s,molecu ic struct and calc function ime,Ass	lect ilar ilar ture ulat nal t	rons, Sc e atoms orbital r of mone ions heory ca nent of	hroedi , quan nethoc oatomi alculat master	inger equation tum numbers, l, homo/heter ic crystals and ions and their y of the cours	n many-electron atoms, o nuclear diatomic l binary compounds, r application to se content	
[Course re	equi	reme	ents]		~ ~ ~	• •						
Understandi	ng of	cont	ents for	Basic I	Phys. Chei	mistry(q	uan	tum the	ory) is	preferred.		
[Evaluatio	n m	etho	ds and	l polic	y]							
Final exam. Some quiz- count as a po	Final exam. Some quiz-sheets are distributed at the lecture whose answers should be submitted on site. Their scores may count as a portion (20%) of the cumulative grade.											

Continue to 量子無機材料学1(材)(2)

# 量子無機材料学1(材)(2)

## [Textbooks]

Isao TANAKA and others <sup>(IIII</sup> (In Japanese) Introduction to electron theory of materials ISBN:10: 9784753655595

The textbook for this lecture (in Japanese) can be purchased at a bookstore.

#### [References, etc.]

#### (Reference books)

Frank L. Pilar <sup>P</sup>Elementary Quantum Chemistry ISBN:10: 0486414647

Mark Weller, Tina Overton, Jonathan Rourke <sup>F</sup>Inorganic Chemistry JISBN:10: 0198768125 Peter Atkins, Julio de Paula, James Keeler <sup>F</sup>Atkins' Physical Chemistry JISBN:10: 0198769865 Neil W. Ashcroft <sup>F</sup>Solid State Physics JISBN:10: 8131500527

Anthony R. West <sup>©</sup>Solid State Chemistry and its Applications <sup>1</sup> ISBN:10: 1119942942 Richard M. Martin <sup>©</sup>Electronic Structure: Basic Theory and Practical Methods <sup>1</sup> ISBN:10: 0521534402 Standard textbooks for elementary quantum physics, quantum chemistry, solid state chemistry and solid state physics may be used.

# [Study outside of class (preparation and review)]

Support materials are available on KULASIS. Password is given in the lecture room. They may be used for reviewing.

#### (Other information (office hours, etc.))

Questions may be sent by e-mail.

									未更新			
Course nu	ımbe	er U-EN	G25 35166 L.	175								
Course title (and course title in English)	量子 Elect	午無機材料学	空2(材) res of Inorganic	Materials 2	Inst nan and of a	ructor's ne, job ti I departn Iffiliation	tle, nent	Graduate Sch Associate Pro	nool of Engineering ofessor,SEKO ATSUTO			
Target yea	r	Brd year students	or above Numb	er of crec	lits	2	Year	/semesters	2023/Second semester			
Days and perio	ods T	ue.2	Class style	Lectur	·e			Language of instruction	Japanese			
[Overview	and	l purpose c	of the cours	e]								
It is importa material fun- chemistry ar functions is	nt to ction nd ba also	understand the s. This lecture ind theory. The discussed.	he electronic s re gives the fu he relationship	structure of ndamentals between th	mate of e he el	erials be lectroni ectronic	ecause c struc c struct	of its determi ture calculation ure of inorgan	nantal impacts on ons based on quantum nic materials and their			
[Course o	bjec	tivesj										
Learning the materials sci	Learning the fundamentals of quantum chemistry and band theory, and their applications to the issues in naterials science.											
[Course s	cheo	dule and co	ontents]									
Electronic st research and Fundamenta wavefunctio Theory, appr method. Theory, appr approximatic Electronic ba Electronic ba Electronic st chemical box Assessment	ructu devels of ns, to roxin roxin ons i and s ructu nding of m	ire theory for elopment. electronic str otal energy, a nations, and i nations, and i n quantum ch structure calcu- tructure calcu- ire and chem g of molecule astery of the	r materials sci ructure theory and one-electro methods in qu methods in qu hemistry. sulation,2times ulation. hical bonding of es and solids. course conter	ence, l time, ,2times, The on energy. antum cher antum cher s, Density fu of molecule	The cha nistr nistr unctions s and e ma	roles of tracteris y (1),4t y (2),3t onal the d solids, stery of	electro tics and imes,V imes,H ory, ps ,2times the co	onic structure d physical me fariational me fartree and Ha eeudopotentia s,The electron urse content i	theory in materials eanings of thod and perturbation artree-Fock I and basis set in ic structure and s assessed.			
[Course re	equi	rements]										
None												
[Evaluatio	n m	ethods and	l policy]									
Evaluations	are r	nade based of	n the examina	tion. The re	esult	s of quiz	zzes an	d reports may	y be considered.			

Continue to 量子無機材料学2(材)(2)

量子無機材料学2(材)(2)

# [Textbooks]

[References, etc.]

(Reference books)

[Study outside of class (preparation and review)]

(Other information (office hours, etc.))

							未更新
Course number	U-ENG25 3	5169 SJ71					
Course title (and course title in English)	ステム学セミ: on Mechanical and	ナー(機) d System Engine	Ins nar eering and of a	tructor's ne, job tit I departm offiliation	ile,	Graduate Sch Associate Profess Graduate Sch Associate Profess	nool of Engineering or, N A M U R A K Y O K O nool of Informatics sor, SAKURAMA KAZUNORI
Target year 3rd y	ear students or above	Number of	credits	2	Year/	semesters	2023/Intensive, Second semester
Days and periods Inter	sive Class	s style So	eminar			Language of instruction	Japanese
[Overview and pu	irpose of the	course]					
[Course objective	es]						
[Course schedule	and content	ts]					
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"							
[Course requirem	nents]						
None							
[Evaluation meth	ods and polic	cy]					
					C	 ontinue to 機械シ	ステム学セミナー(機) <b>(2)</b>
## 機械システム学セミナー(機)(2)

### [Textbooks]

#### [References, etc.]

(Reference books)

[Study outside of class (preparation and review)]

(Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

[Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

							未更新
Course numbe	r U-EN	G25 45170 SJ71					
Course title (and course title in English)	クロ材料の ication and a	加工・評価の基 nalysis of micror	In: 甚礎 na naterials an of	structor's me, job tit d departn affiliation	tle, nent	Graduate Sch Professor,TS Graduate Sch Professor,SU Graduate Sch Professor,YC Graduate Sch Associate Pro	nool of Engineering UCHIYA TOSHIYUKI nool of Engineering ZUKI MOTOFUMI nool of Engineering DKOKAWA RYUUJI nool of Engineering Dfessor,HIROTANI JUN
Target year	4th year students of	or above <b>Number</b>	of credits	2	Year	/semesters	2023/Intensive, Second semester
Days and periods I	ntensive	Class style	Seminar			Language of instruction	Japanese
[Overview and	l purpose o	of the course]					
[Course objec	tives]						
-							
[Course sched	dule and co	ontents]					
,1time,							
,1time,							
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, Itime,							
, Tullie,							
,Juines, Jtimes							
1time							
.2times.							
.1time.							
, ,							
[Course requi	rements]						
None							
[Evaluation m	ethods and	l policy]					
[Textbooks]							
[References, e	etc.]						
(Reference	books)						
					c	ontinue to マイクロ	コ材料の加工・評価の基礎 <b>(2)</b>

マイクロ材料の加工・評価の基礎(2)

[Study outside of class (preparation and review)]

(Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

[Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

							未更新
Course number	r U-EN	G25 45171 LJ71					
Course title (and course 知能 title in Intell English)	システム工 igent Systen	学(機) ns Engineering	lr n a o	nstructor's ame, job ti nd departn f affiliation	tle, nent	Graduate Sch Professor,KA Graduate Sch Senior Lecture	nool of Informatics ANOU MANABU nool of Engineering or,NAKANISHI HIROAKI
Target year 4	th year students of	or above <b>Number</b>	of credit	<b>s</b> 2	Year	/semesters	2023/First semester
Days and periods ${f W}$	ed.2	Class style	Lecture			Language of instruction	Japanese
[Overview and	purpose o	f the course]					
[Course object	ives]						
[Course sched	ule and co	ntents]					
,2times,		-					
,2times,							
,2times,							
,2times,							
,2times,							
,2times,							
,2-3umes,							
[Course require	ements]						
None							
[Evaluation me	thods and	policy]					
[Textbooks]							
[References, et	tc.]						
(Reference b	ooks)						
					<sub>c</sub>	 Continue to 知能	 システム工学(機) <b>(2)</b>
					-		

# 知能システム工学(機)(2)

# [Study outside of class (preparation and review)]

(Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

## [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

Course nu	umber	U-EN	G25 2	5172 LJ75						
Course title (and course title in English)	材料科 Fundam	学基礎 3 mentals of 1	Mater	ials Science	e III	Ins nar anc of a	tructor's ne, job tit I departm affiliation	ile, nent	Graduate Scl Associate Profe	nool of Engineering essor,TOYOURA KAZUAKI
Target yea	<b>r</b> 2nd y	year students of	or above	Number o	of cred	lits	2	Yea	r/semesters	2023/Second semester
Days and perio	ods Fri.1		Class	s style	Lectur	e			Language of instruction	Japanese
[Overview	and p	u <mark>rpose o</mark>	f the	course]						
[Course o	bjectiv	es]								
[Course s	chedul	e and co	ntent	ts]						
,1time,										
,1time,										
,1time, 3times										
,3times, 4times.										
,4times,										
,1time,										
[Course re	equiren	nents]								
None										
[Evaluatio	n meth	ods and	polic	cy]						
[Textbook	s]									
isbn{}{9784	1254240	184}								
[Referenc	es, etc.	]								
(Referei	nce boo	oks)								
isbn{}{9784	563067	120} isbn	{}{97	845630671	37}		N.T. 1	1 . 1	1 1 ()()	4124502051
D.A.Porter	and K.E	.Easterling	g: Pha	se Transfor	mations	s 1n .	Metals a	nd Al	loys isbn{ }{(	412450305}
[Study ou	tside o	f class (p	orepa	ration and	d revie	w)]				
(Other in	formati	on (offic	e hou	urs, etc.) )						
*Please visit	KULA	SIS to find	l out a	about office	hours.					

										未更新
Course nu	umber	U-EN	G25 3	5173 LJ75						
Course title (and course title in English)	材料 Funda	組織学 amentals of M	licrost	ructure of M	laterials	Inst nan and of a	ructor's ne, job tif I departm Iffiliation	ile, ient	Graduate Sch Professor,HI	1001 of Engineering DEYUKI YASUDA
Target yea	<b>r</b> 31	rd year students o	or above	Number o	of cred	its	2	Year	/semesters	2023/Second semester
Days and perio	ods Mo	on.1	Clas	s style	Lecture	e			Language of instruction	Japanese
[Overview	and	purpose o	f the	course]						
Physical and microstructu will be expla momentum mechanism, equilibrium	l cherr ure. In ained l transp solute proces	nical propert this lecture, by using the ort). Student e partition, m sses).	ies of the m rmody s stud	materials de nicrostructur namics and by the funda tructure sele	epend o re evolu l kinetic mentals ection, d	n no tion s (at of 1 lend	ot only la during tomic di microstr ritic gro	attice s phase ffusion ucture wth, e	structure and o transformatio n, thermal energy evolution (nu utectic growth	composition but also n (i.e. solidification) ergy transport and icleation, growth h and equilibrium / non-
[Course o	bject	ives]								
<ol> <li>To unders</li> <li>To be able</li> </ol>	stand r e to us	elationship l se thermodyn	between namic:	en microstrus s and kinetion	ucture e cs for u	volu nder	ition and standing	l thern g micr	nodynamics / ostructure in 1	kinetics. naterials.
[Course s	ched	ule and co	ntent	s]						
<ol> <li>Introducti class</li> <li>Nucleatio</li> <li>Interface if 4.Growing if</li> <li>Dendritic if</li> <li>Solute par solutes)</li> <li>Eutectic gr</li> <li>Non-equility</li> <li>Microstru rules in phas</li> <li>Learning</li> </ol>	on (1) n (1): morph nterfac growth tition a rowth ibrium cture of se tran g achie	e: fundament classical nuc nology (1): in ce (3): local h (2): mecha and segregat (1): coopera n phase trans evolution (2) sformation evement eva	als of cleation nterface equili nism of ion (2 tive g forma ): rela	thermodyna on theory an ce morpholo brium at int of dendritic 2): solute pa rowth (eute ation (1): rap tionship bet n, and feedb	amics an od curva ogy (ato erface, growth rtition a ctic gro pid solic ween m pack (1)	nd k ture mic solu , sel t int t int lific iicro	inetics, effect scale), r ite partit ection n erface, s ) of mul ation, no ostructur	which macros ion, st nechar segreg tiple p on-equ re evol	are required ascopic interface ability of intentism ation (non-un hases, selection ilibrium and a ution and pha	for understanding this ce shape rface iform distribution of on of microstructure metastable phases se diagram, selection
Fundamenta	ls of N	 Microstructu	re of I	Materials 1,	2 and 3					
									Continue to	 材料組織学 <b>(2)</b>

# 材料組織学(2)

### [Evaluation methods and policy]

Evaluation method: Evaluation will be based on one written examination at the end of semester. Evaluation standard: The result of a written examination should be 60 and above out of 100. (60 and above: Passed, 59 and below: Failed)

Evaluation may include short reports.

#### [Textbooks]

松原英一郎他 『金属材料組織学』(朝倉書店)ISBN:9784254240184

[References, etc.]

( Reference books )

## [Study outside of class (preparation and review)]

Students are required to carry out a review of class.

## (Other information (office hours, etc.))

Course n	umber	U-EN	G25 35	174 LJ53	U-EN	G25 35174	LJ72						
Course title (and course title in English)	Course title (and course title in English)放射線計測学 Radiation detection and measurementInstructor's name, job title, and department of affiliationGraduate School of Engineering Associate Professor, TSUCHIDA HIDETSUGU												
Target yea	<b>r</b> 3rd y	ear students of	or above l	Number	of cred	its 2	Year	/semesters	2023/First	semester			
Days and perio	ods Wed.	.2	Class	style	Lecture	e		Language of instruction	Japanese				
[Overview	and pu	urpose o	f the c	ourse]									
放射線(イ 放射線と物 講義の目的	オンや	電子など 相互作用 々な分野	の荷電 、計測 への放	粒子線、 に用いる 射線利用	X線や 各種放 におい	線などの 射線検出器 て放射線計	)光子 の動 「測の」	線、中性子線 作原理や計測 重要性を理解	<ul><li> ま)の計測 う </li><li> う </li><li> 対 お 等 を う </li><li> な ち 、 、 、 、 、 、 、 、 、 、 、 、 、 、 、 、 、 、</li></ul>	去について、 述べる。本 である。			
[Course o	bjective	es]											
放射線の性 技術を理解	質及び するこの	物質との とにより	相互作 、放射	用に関す 線の安全	る基本 な取扱	的事項と放 い等につい	、 射線 な学	検出器の基本 修する。	いな動作の	亰理や測定			
[Course s	chedule	e and co	ntents	\$]									
(1)放射 本講義の全 計測回路の	線計測( 体的な 基本構)	の概要【 概要を説 成)、検	1週】 明する 出器の	。具体的 概要及び	には、 放射線	放射線の性 計測で用い	:質、)  る単	放射線計測の 位などについ	)概要(測算 )て説明する	定の種類や る。			
(2)光子 光子線(X 連した基本	線の性質 線・ 約事項	質【1週】 線)の性 を説明す	質及び る。	物質との	相互作	用(相互作	用過	怪とその断面	ī積、減 <del>衰</del> /	など) に関			
(3)荷電 荷電粒子( ど)に関連	粒子線( イオン、 した基本	の性質【 電子 ) 本的事項	1週】 の性質 を説明	及び物質 する。	との相	互作用(相	互作	用過程、エネ	ヽルギー損タ	夫、飛程な			
(4)中性 中性子の性	子線の   質、物]	生質【1逃 質との相	圓】 互作用	(相互作	用過程	、核反応な	:ど)	に関連した基	基本的事項。	を説明する。			
(5)放射 放射線検出 本的な動作 する。	線検出 器(ガ 原理を〕	器【4週】 ス入り検 述べると	出器、 ともに	半導体検 、放射線	:出器、 !の種類	シンチレー に応じた検	·ショ〕 〔出器(	ン検出器、 <i>そ</i> の検出原理及	この他の検出 なび基本特性	出器)の基 生等を解説			
(6)放射 放射線計測 モジュール	線計測 の基本 の種類。	支術【1逃 構成(放 とその役	剧】 射線の 割)及	エネルギ び計測回	ー計測  路の信	や時間計測 号処理など	」をす につ	る場合の構成 ハて説明する	など)、言 。	計測回路(			
(7)放射 荷電粒子線 	線のス 、 線、 	<sup>ペ</sup> クトル 中性子 <b></b>	の測定 線など 	【2週】 のエネル 	ギース	ペクトルの 	o代表的 (	的な測定法に Continue to )	こついて説明 放射線計測	月する。 - <b></b> 学 <b>(2)</b>			

#### 放射線計測学(2)

(8)放射線計測の定量【1週】

放射線計測の定量に関わる基本的事項について解説する。具体的には、絶対測定と相対測定との違い、検出効率、立体角などを説明する。

(9)放射線計測における統計【2週】 放射線計測に用いる統計学(確率分布及び誤差伝播など)を説明する。

(10)総括【1週】

本講義の全体のまとめを行うとともに、放射線計測を基礎とした放射線の安全な取扱いについて考 察する。

#### [Course requirements]

原子物理学

#### [Evaluation methods and policy]

筆記試験(85点)と出席点(15点)の合計で成績(100点満点)を評価する。

#### [Textbooks]

特に定めない

#### [References, etc.]

#### (Reference books)

ニコラス・ツルファニディス著 阪井英次訳 放射線計測の理論と演習(上、下巻)現代工学社な ど ibid{}{TW86012413} ibid{}{BB01056431}

### [Study outside of class (preparation and review)]

講義中に配布する演習問題及び参考書等を用いて行う。

### (Other information (office hours, etc.))

必要に応じてプリントを配布する。

										未更新
Course nu	ımbe	er U-EN	G25 3	5200 LJ75						
Course title (and course title in English)	高分 Intro	↑子材料概論 oduction to Po	(材 olyme	) r Materials		Inst nan and of a	tructor's ne, job tit I departm affiliation	tle, nent	Part-time Lectu Graduate Sch Associate Pro	rer,SAWAMOTO MITSUO nool of Engineering ofessor,SEKO ATSUTO
Target yea	r i	3rd year students	or above	Number	of cred	its	2	Year	/semesters	2023/First semester
Days and perio	ods N	Ion.2	Class	s style	Lecture	e			Language of instruction	Japanese
[Overview	anc	l purpose o	of the	course]						
[Course o	biec	tives								
	•	-								
	chor	dulo and co	nton	el						
	cned	Jule and Co	nten	.5]						
, i unie, .3times.										
,4times,										
,4times,										
,2times,										
,1time,										
[Course re	qui	rements]								
None										
[Evaluatio	n m	ethods and	polic	cy]						
[Textbook	s]									
[Reference	es, e	etc.]								
( Referer	nce l	books)								
[Study ou	tside	e of class (	orepa	ration and	d revie	w)]				
(Other in	orm	ation (offic	e hou	urs, etc.) )	1					
*Please visit	KU	LASIS to find	d out a	about office	hours.					

										÷	未更新
Course nu	umbe	er U-EN(	G25 352(	03 LJ28	U-EN	G25	5 35203	LJ52	U-ENG25 3	5203 LJ77	
Course title (and course title in English)	原子 Nuc	<sup>2</sup> 炉物理学( lear Reactor F	原) Physics			Inst nan and of a	tructor's ne, job tit I departm affiliation	tle, nent	Graduate Sch Associate Pro Graduate Sch Assistant Pro Graduate Sch Professor,TA Graduate Sch Associate Profe	nool of Engine ofessor, TASA nool of Engine ofessor, ABE Y nool of Engine KAGI IKUJI nool of Engine essor, TAISHI KO	ering KI SEIJI ering UTAKA ering eering OBAYASHI
Target yea	r	3rd year students c	or above <b>N</b>	umber c	of cred	its	2	Year	/semesters	2023/First se	emester
Days and perio	ods F	řri.1	Class s	style	Lecture	e			Language of instruction	Japanese	
[Overview	/ and	d purpose o	f the co	ourse]							
[Course o	bjec	ctives]									
•											
[Course s	che	dule and co	ntents]								
,4times, ,4times, ,3times, ,3times, ,1time,											
[Course re	equi	rements]									
None											
[Evaluatio	on m	ethods and	policy]								
[Textbook	(s]										
[Referenc	es, e	etc.]									
( Referei	nce	books)									
[Study ou	tsid	e of class (r	orepara	tion and	l revie	w)]					
									 Continue to 原 <sup>:</sup>	子炉物理学(原	) (2)

原子炉物理学(原)**(2)** 

(Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

## [Courses delivered by instructors with practical work experience]

(1) Category

A course with practical content delivered by instructors with practical work experience

(2) Details of instructors ' practical work experience related to the course

									未更新
Course nu	umber	U-EN	G25 35233 LJ75						
Course title (and course title in English)	<mark>結晶回</mark> Xray D	]折学(材 Diffraction	·)		Inst nan and of a	tructor's ne, job tit I departm offiliation	tle, nent	Graduate Sch Professor,OK	nool of Engineering XUDA HIROSHI
Target yea	<b>r</b> 3rd	year students	or above <b>Number</b>	of cred	its	2	Year	/semesters	2023/Second semester
Days and perio	ods Fri.2	2	Class style	Lecture	e			Language of instruction	Japanese
[Overview and purpose of the course]									
Structural ar diffraction p	alyses henome	by X-ray d ena, crysta	liffraction method llography, and di	l will be ffraction	giv by	en. In th powder	ne lectu sampl	ure, the properties will be lect	rties of X-rays, X-ray tured.
[Course o	bjectiv	/es]							
Students wil crystalline s	l learn t tructure	the crystal es, diffracti	structure analyse on conditions, an	s by X-r d recipro	ays ocal	through lattices	the co	ourse works of	f X-ray properties,
[Course s	chedu	le and co	ontents]						
ray filter6.G Crystallogra Practical exa lattices6. Cr Description projection Diffraction b Calculation Diffraction b Structural ar Determination Reciprocal 1 real lattice3.	eneratic phy,3tin amples of ystalling of cryst of cryst of struc by a pow nalyses of on of Br attice an Recipro	on of x-ray mes,1.One of crystals e structure cal planes a als,3times, ture factor wder samp of cubic sy ravais#039 nd diffract	dimensional crys dimensional crys 4. Body-centered s of several comp and directions,1tin ,1. Diffraction by s le,1time,1. Princi ystems,time,1. De lattice in cubic s ion condition,3tim e and diffraction c	stal sym cubic, f oounds me,1. De crystall ple of di terminat ystems nes,1. D condition	meti ace- escri ine 1 iffra tion efin	ry2.7 cry centered aption of lattice2. ctomete of a latt ition of	ystal sy d cubio f lattico Bragg r2. X- ice pa recipro	ystems and 14 c and hexagon e planes and d g conditions an ray diffraction rameter in cub ocal lattices2.	Bravais#039 lattices3. al close-packed lirections2. Stereo ad scattering angle3. by powder sample bic systems2. Reciprocal lattice and
[Course re	equire	ments]							
None									
[Evaluation methods and policy]									
The course v	vill be e	evaluated f	from the scores of	f a midte	erm (	examina	(	40%) and a fir	nal examination (60%). 晶回折学 ( 材 ) <b>(2</b> )

結晶回折学(材)**(2)** 

### [Textbooks]

Instructed during class

## [References, etc.]

 $(\ {\rm Reference\ books\ })$ 

## [Study outside of class (preparation and review)]

Concentrate on a lecture, and review the contents which you got by a lecture by rearanging your lecture note and studying any questions of lecture contents for at least 4 hours in each lecture.

## (Other information (office hours, etc.))

										未更新
Course nu	umber	U-ENC	G25 2:	5300 LJ71	U-EN	G25	25300	LJ77		
Course title (and course title in English)	エレク Introduc	トロニクス ction to Ele	入門 ectron	(機宇) iics	情報	Inst nan and of a	ructor's ne, job tit I departm iffiliation	ile, ient	Graduate Sch Associate Profe	nool of Informatics ssor,AWANO HIROMITSU
Target yea	<b>r</b> 2nd y	year students o	or above	Number	of cred	its	2	Year	/semesters	2023/First semester
Days and perio	ods Tue.	5	Class	s style	Lecture	e			Language of instruction	Japanese
[Overview	and pu	urpose o	f the	course]	<u>.</u>				-	
In this cours indispensabl	e, studer e in toda	nts will lea ay's inform	rn ab ation	out the basi society, an	c charac d comp	cteri uter	stics of architec	electro ture a	onic circuits, c s hardware for	ligital circuits that are running programs.
[Course o	bjectiv	es]								
In this cours Department	e, studer of Physi	nts will lea les and the	rn the Depa	e minimum artment of C	level of Compute	eleo er Sc	ctronic c cience, a	circuits nd as a	s required for researchers ar	research in the nd engineers.
[Course s	chedul	e and co	ntent	s]						
The order ar depending o * Fundamen * Amplificat * Fundamen algebra, Kar * Sequential * Circuit De * Digital rep which is ofte * Arithmetic numbers. * Overview executes pro * Machine la instructions * Compositi using a proc * Integrated * Feedback	ad number n the lect tals of E tion Circe tals of d naugh di- circuits lay (1 cl oresentat en used i e logic ci of comp ograms. anguage that can on of co essor that circuit m (1 class)	er of lecture ture policy lectronic ( suits (1 cla igital logic iagrams, e (1 class) I ass) Learn ion of num n scientifi reuits (1 c uter archit (1 class) I be interpro- mputer arc at can exect nanufactur w.DeepL.c	res for y of the Circuitess) Let c circuites the c circuites the c circuites the c circuites the c circuites the c circuites the c circuites the circuites the circuites the circuites the circuites the circuites the circuites the circuites the circuites the circuites the circuites t	r each topic ie instructo ts (3 clases earn about a nits (1 class how to con t what dete (1 class) Le technologie Learn abou e (1 class) I about the re y hardware ture (2 class mple instru rocess (1 cl ranslator (f	e are not r and the ) Learn amplific. ) Learn astruct ci- rmines t earn how cal calcu- t the stru- Learn ab elationsl ses) Lea ass) ree vers	fixe e back DC, ation function function incuit he cover allation out nip t rrn a s an ion)	ed, and a ckgroun , AC, an n circuit damenta dits with perating represer ons. re of ari the conf between bout the exampl	are sub d and d trans s using ls of lo interna g speed at num thmeti figurat high-l e comp le.	opect to change understanding sient analysis. g operational a ogic circuits in al states. d of a circuit. bers including c circuits for ion of compute level language position and op	e by the lecturer g of the students. amplifiers. ncluding Boolean g floating point format, digitally represented ters, the hardware that es such as C and peration of computers,
		·			·		· – –	<sub>c</sub>	ontinue to エレクトロ	 ニクス入門(機宇) 情報 <b>(2)</b>

## エレクトロニクス入門(機宇) 情報 (2)

## [Course requirements]

Students who do not specialize in electrical and electronic engineering can take this course if they have some prior knowledge of high school physics.

### [Evaluation methods and policy]

Multiple report assignments will be given during the course to evaluate the achievement of the objectives.

#### [Textbooks]

Not used

### [References, etc.]

### ( Reference books )

Introduced during class

### [Study outside of class (preparation and review)]

Students are required to review mathematical expressions using complex numbers in advance.

## (Other information (office hours, etc.))

Course nu	umbe	er	U-EN	G25 3	5301 LJ25	U-EN	G25	5 35301	LJ51	U-ENG25	3530	1 LJ71	l	
Course title (and course title in English)	生体 Bior	x機柄 nech	载工学 anical E	nginee	ering		Ins nar and of a	tructor's ne, job tit d departm affiliation	tle, nent	Institute for Professor,SI Institute for Professor,A Graduate Sc Professor,Y Graduate Sc Professor,IN	Life : HINT Life : DAC Phool OKC Phool	and Me FAKU and Me CHI TA of En OKAW of En E YAS	edical 3 HIRC edical 3 AIJI gineer 7A RY gineer SUHIR	Sciences DFUMI Sciences ing UUJI ing SO
Target yea	r	3rd ye	ar students	or above	Number	of cred	its	2	Year	r/semesters	20	23/Sec	cond so	emester
Days and perio	ods V	Ved.4	Ļ	Clas	s style	Lecture	e			Language of instructio	n Jap	oanese		
[Overview	and	d pu	rpose d	of the	course]									
生体あるい は生体およ 細胞および を基にして	は医 び機 組織 生体	療械スシス	関わる 包含し ールで 、テムを	機 械 シ こ て 観 械 二	システム設 ステム全体 される複雑 工学的に操	計にお の設計 な生命 作ある	いて 指 銀 乳 い に	て,物理 †を得る 食につい は利用す	学に <sup>7</sup> 上で いて物 る方	根ざした視, 重要である 理学的視点; 法を学ぶ.	点か . そ から	らの生 こで, 理解し	Ξ命現 生体 ⁄ , そ	象理解 分子 , の知見
[Course o	bjec	tive	s]											
生体システ 材料力学, とを学ぶ. 工学応用す	ムや流こる	医療学にたって	</th <th>ステム 械工 転 付 る</th> <th>ム等の具体 学科目がシ 学に対する</th> <th>的かつ ステム 俯瞰的</th> <th>身辺の現成</th> <th>丘な対象 里解ある 気を得る</th> <th>を題 いは らと共</th> <th>材とし,2回 制御の上で፤ に機械工学(</th> <th> 生面 重要 の立:</th> <th>2当で な洞察 場から</th> <th>ある 客を与</th> <th>執力学 , えるこ 現象を</th>	ステム 械工 転 付 る	ム等の具体 学科目がシ 学に対する	的かつ ステム 俯瞰的	身辺の現成	丘な対象 里解ある 気を得る	を題 いは らと共	材とし,2回 制御の上で፤ に機械工学(	生面 重要 の立:	2当で な洞察 場から	ある 客を与	執力学 , えるこ 現象を
[Course s	che	dule	and co	onten	ts]									
1週:生体机 生体機械工 学の観点か である.第 の考え方,	機 学 は 1 週 や	工学( す,生 新し よ,空	の考え7 4体分子 ,,得ら 生命現 9 見積も	ら ,細 れる 象 を 定 の 方 る	●から組織 印見を医療 注量的に取り を紹介する	や器官 や福祉 )扱い,	, ま に ん そ	5るいは 5用し, の背後	(体全) 社会  こある	体まで , そ( 的な諸問題( )物理の理解	の機 の解: 別に必	能と構 決に著 が要な	ち す 数 型 モ	物理工 る学問 Ξデル
2 週:生体 体を構成す これらの臓 に細胞や複	組織 る様 器はの	の 積 々 な す 、 西 御 新 御 御 御 御 御 御	<sup>5</sup> 造 に臓器の 目有の組 日胞素材	)形や 織から かられ	構造は , そ らなり , そ なる . これ	れぞれ れらは らの組	の団 硬約 織れ	国有の機 目織,軟 Þ細胞の	能を に 組織 間構造	発揮できる に分けられ について学	形や: る . ぶ .	構造を また,	Eして 組織	いる. はさら
3 - 4週 : 力とモーメ 体モデリン	生体 ント グに	、機械 など こつ に	ば工学と ℃の機械 Nて学ぶ	機械之 力学の 、傷	り学 D基礎的事 害予測や理	項を紹 学療法	介し との	」, 体全 )関連に	:体や. :つい	上肢,下肢; て紹介する	など	を力学	ዸ解析	する人
5 - 6週: 応力やひず 的性質につ 学的性質に 紹介する.	生体 み, いて つい	、機械 料弾 子ろ いて学	【工学と 単性モデ ヾ. さら <sup>⊉</sup> ぶ・ま	材料 ルな に , た , こ	り学 ビの材料力 畑胞内に存 これらの力	学の基 在する 学特性	礎的 DN を言	り事項を A , 細胞 †測する	治介 回骨格 のための	し,硬組織 フィラメン の材料力学(	, 軟 トな りな	組織, どの生 試験方	細胞 上体分 う法に	の力学 子の力 ついて
7 - 8週:	生体	、機械	江学と	流体	力学									
·										Continue to		【機械	 ∐学 <b>(2</b>	) – – -

生体機械工学(2)

ベルヌーイの定理やポアズイユの法則などの流体力学の基礎事項を紹介し,生体における流れ現象 について学ぶ.動脈硬化などの病態と血流の関係,輸血や点滴などの医療行為における流体力学と の関連について紹介する.

9-10週:生体機械工学と生物学

受精卵から始まる個体発生を経て,体を構成する器官がどのように形作られるのか,また,成体に おける組織のリモデリングや再生現象を紹介し,先端的な生体機械工学の応用に必要となる幹細胞 分化,形態形成,生体適応などの生物学の基礎的事項について紹介する.また,進化的に獲得され た生物の形作りと構造最適化設計との類似性を解説し,構造設計工学の生物学への応用や,その逆 として,生物に着想を得た構造設計工学への新たな展開を解説する.

11-12週:生体機械工学による生体模倣システム

生体模倣システムとは,マイクロチップ上に幹細胞や前駆細胞から誘導したミニ臓器を構築し,培 養液などの送液システム,各種分析装置などをパッケージした人体生理を模倣するシステムである ヒトiPS細胞を用いた創薬開発や再生医療,ヘルスモニタリングや人体拡張などの産業応用などに 期待されており,開発設計における生体機械工学の応用を解説する.

13-14週:生体機械工学による生体計測

最先端科学研究では生体機能発現の構成的理解を目指し1つ1つの細胞機能を詳細に計測する1細胞 解析が用いられており,そこには多くの機械工学技術が活用されている.ここでは細胞分化や細胞 間相互作用の解析などの具体例を示しながら1細胞解析技術の開発設計における生体機械工学の応 用を解説する.

#### [Course requirements]

None

#### [Evaluation methods and policy]

レポート課題,期末試験を総合して判定する.

#### [Textbooks]

Not used

#### [References, etc.]

(Reference books) 『細胞の物理生物学』(共立出版) 『生体機械工学』(日本機械学会) 『機械工学便覧デザイン編< 8>生体工学』(日本機械学会)

[Study outside of class (preparation and review)]

Continue to 生体機械工学(3)

生体機械工学**(3)** 

# (Other information (office hours, etc.))

Course nu	umbe	er	U-EN	G25 4	5995 GJ77								
Course title (and course title in English)	e title ourse sh) http://www.shiperinduction/												
Target yea	r	4th ye	ear students	or above	Number	of cred	its	4	Year	/semesters	2023/Intensive, First semester		
Days and perio	ods 1	Inter	nsive	Class	s style	Semina	ar			Language of instruction	Japanese		
[Overview and purpose of the course]													
担当教員の 体的に取り し、その意	指導 組む 義や	算の う。 ご の 重 子	もと、機 この研究 要性等に	続工宅 活動を ついで	学に関する を通じて課 てまとめる	研究課 題解決 能力を	題 を 能 た 着 う	E設定し Dを習得 う。	、そ( する。	の課題解決の 得られた成	)ための研究活動を主 に果を関連研究と比較		
[Course o	bjec	tive	es]										
課題設定、	関連	研究	究の調査	、研究	記計画の立	案、報	告の	)作成な	どをi	通じて、研究	2活動について学ぶ。		
[Course s	che	dule	e and co	ontent	s]								
1~4回 研究課回の 5~9研 10~12 設て 13~1 研 行 の の 1 3 の の の の の の の の の の の の の の の の	設調回新回立	<u>-</u> 証、 幸 記性、	服告 独創性	等の村	<b> </b>								
[Course re	equi	rem	nents]										
物理工学科 ること。	機械	<b>覚シ</b> ン	ステム学	コーフ	スが指定す	る、入	学年	『次に対	応し1	と特別研究着	手条件を満たしてい		
[Evaluatio	n m	eth	ods an	d polic	cy]								
成績評価は	一連	回る	开究活動	の実放	も状況に基	づいて	行う	ò.					
[Textbook	s]												
配属研究室	で指	定さ	される。										
[Reference	es, e	etc.]											
( <b>Referer</b> 木下是雄『	( <b>Reference books</b> ) 木下是雄 『理科系の作文技術』(中央公論新社 (新書))ISBN:9784121006240												
[Study out	tsid	e of	class (	prepa	ration and	d revie	w)]						
各指導教員	の指	示	こ従うこ	と。									
( Other in	form	natio	on (offi	ce hou	urs, etc.) )								
*Please visit	t KU	LAS	SIS to fir	d out a	bout office	hours.							

Course nu	umbo	er	U-EN	G25 4	5995 GJ77	1					
Course title (and course title in English)	特月 Gra	刂研习 duati	究1(機 ion Thesi	) s1			Inst nan and of a	tructor's ne, job tit I departm affiliation	ile, nent	Graduate Sch Professor,HI	nool of Engineering RAKATA HIROYUKI
Target yea	r	4th ye	ear students	or above	Number	of cred	its	4	Year	/semesters	2023/Intensive, Second semester
Days and perio	ods 🛛	Inter	nsive	Clas	s style	Semina	ar			Language of instruction	Japanese
[Overview	an	d pu	irpose c	of the	course]						
担当教員の 体的に取り し、その意	指導 組 む 義 や		<u>うと、機</u> この研究 要性等に	械工業	学に関する を通じて調 てまとめる	る研究課 課題解決 ら能力を	題 を た た た	E設定し Jを習得 う。	,、そ( する。	の課題解決の ,得られた成	)ための研究活動を主 成果を関連研究と比較
[Course o	bjeo	ctive	s]								
課題設定、 まとめ、発	関連 表す	Ⴒ研ヲ 「るこ	宅の調査 ことを通	、研究 じて、	究計画の立 研究活動	Z案、実 加につい	験と て学	≤検証を ≤ぶ。	行う。	、これらの成	<b></b> 東を特別研究として
[Course s	che	dule	and co	nten	ts]						
- 設 2 定 2 ま 1 ま 2 の 回 業 1 た 1 ま 2 の し 定 2 、 験 1 用 の の 二 次 2 、 験 1 用 の の の の の に の の の の の の の の の の の の の	新理回めで告	見性、 論検 特別 う発え 言の言	独創性 すの実施 別研究報 長 丁正	等の 森 結 い 告書 の 福	再検証 果の考察、 D執筆、学	実験ま ∲士発表	たに 会の	は理論検 つための	討の う資料(	計画の修正な 作成	ことにより研究を遂行
[Course re	equi	irem	ients]								
物理工学科 ること。ま	機柄 た、	、 特別	ステム学 判研究 2	コーン (前期	スが指定す 期集中)を	「る、入 と履修済	学年 みて	F次に対 であるこ	応す と。	る特別研究着	<b>手条件を満たしてい</b>
[Evaluatio	n m	eth	ods and	poli	cy]						
成績評価は づいて行う	一道 。	包の石	开究活動	の実放	<b>沲状況、</b> 学	生発表	会に	こおける	発表	<b>内容、特</b> 別研	T究報告書の内容に基
[Textbook	s]										
各研究室に	おし	て	旨定する	o							
[Reference	es,	etc.]									
(Referer (参考書)	nce	boo _	ks)		<b>_</b>	<b></b> .					
		-							(	Continue to 特	别研究1(機) <b>(2)</b>

# 特別研究1(機)**(2)**

# 木下是雄『理科系の作文技術』(中央公論新社(新書)) ISBN:9784121006240

[Study outside of class (preparation and review)]

各指導教員の指示に従うこと。

(Other information (office hours, etc.))

オフィスアワーの詳細については、KULASISで確認してください。

Course n	umber	ber U-ENG25 45995 GJ77										
Course title (and course title in English)	特別研 Graduat	究1(材 ion Thesis	) s1		Instructor's name, job title, and department of affiliation							
Target yea	<b>r</b> 4th y	ear students o	r above <b>Number d</b>	of cred	its 4	Year	/semesters	2023/Intensive, First semester				
Days and perio	ods Inter	nsive	Class style	Semina	ır		Language of instruction	Japanese				
[Overview	and pu	urpose o	f the course]									
担当教員の指導のもと、材料科学に関する研究課題を設定し、その課題解決のための研究活動を主 体的に取り組む。この研究活動を通じて課題解決能力を習得する。得られた成果を関連研究と比較 し、その意義や重要性等についてまとめる能力を養う。												
[Course o	bjective	es]										
課題設定、関連研究の調査、研究計画の立案、報告の作成などを通じて、研究活動の進め方を習得 する。												
[Course s	chedule	e and co	ntents]									
研究課題の設定(4回) 先行研究の調査、報告(4回) 設定課題の新規性、独創性等の検討(4回) 研究計画の立案(3回) 上記の研究活動に加え、特別研究報告書の執筆のための指導を提供する。												
[Course re	equiren	nents]										
物埋丄字科	材料料	字コース	が指定する入字	年次の	特別研究看	手杀的	牛を満たして	いること				
[Evaluatio	n meth	ods and	policy]									
- 成績は一連	の研究ネ	活動の実活	施状況、作成し	た報告	などに基づ	いて約	総合的に評価	する。				
[Textbook	s]											
指導教員が	個別に	指示する										
[Referenc	es, etc.	]										
( Reference books )												
[Study outside of class (preparation and review)]												
各指導教員の指示に従うこと												
(Other information (office hours, etc.))												
<u>、                                    </u>												
*Please visit KULASIS to find out about office hours.												

Course nu	ımbe	er	U-EI	NG25 4	5995 GJ77							
Course title (and course title in English)	特月 Grae	刂研う duati	売1(エネ) on Thesis1				Instructor's name, job title, and department of affiliation			Graduate School of Energy Science Professor,HAGIWARA RIKA		
Target yea	r	4th ye	ear student	ar students or above Number of credits 4 Year/semesters 2023/Intensive, First semes								
Days and perio	ods ]	Inter	sive	Clas	s style	Semina	ar			Language of instruction	Japanese	
[Overview and purpose of the course] 担当教員の指導のもと、エネルギー応用工学に関する研究課題を設定し、その課題解決のための研 究活動を主体的に取り組む。この研究活動を通じて課題解決能力を習得する。得られた成果を関連 研究と比較し、その意義や重要性等についてまとめる能力を養う。												
[Course o	bjec	tive	es]									
課題設定、	関連	翻到	この調査	查、研究	究計画の立	案、報	告の	O作成な	:どをi	通じて、研究	記話動について学ぶ。	
[Course schedule and contents]         1~4回         研究課題の設定         5~9回         先行研究の調査、報告         10~12回         設定課題の新規性、独創性等の検討         13~15回         研究計画の立案												
[Course re	equi	rem	ents]									
物理工学科	エネ	ペル=	ドー応月	用工学:	コースが指	定する	入学	を年次の	特別で	研究着手条件	‡を満たしていること。	
[Evaluatio	n m	eth	ods an	d poli	cy]							
ー連の研究	活動	りの夏	<b>〔施状</b> 〕	兄に基づ	ブいて行う	0						
[Textbook	s]											
Not used												
[Reference	es, e	etc.]										
(Referer	nce	boo	ks)									
[Study out	tsid	e of	class	(prepa	ration and	d revie	w)]					
各指導教員	の指	家は	こ従うこ	こと。								
(Other in	form	natio	on (off	ice ho	urs, etc.) )							
*Please visit	KU	LAS	SIS to fi	nd out a	about office	hours.						

Course nu	umber	U-ENO	G25 4599	95 GJ77							
Course title (and course title in English)	urse title nd course e in glish) structure of curves from the students of above number of curves from the students of above number of curves					Instructor's name, job title, and department of affiliation		le, ient	Graduate School of Engineering KANKEI KYOIN Graduate School of Engineering Professor,MIYADERA TAKAYUKI Graduate School of Engineering Assistant Professor,OGURE KENZOU		
Target yea	r 4th	year students o	or above <b>N</b> l	umber o	of cred	its	4	Year/	semesters	2023/Intensive, First semester	
Days and perio	ods Inte	ensive	Class s	tyle	Semina	ar			Language of instruction	Japanese	
[Overview and purpose of the course]											
担当教員の指導のもと、原子核工学に関する研究課題を設定し、その課題解決のための研究活動を 主体的に取り組む。この研究活動を通じて課題解決能力を習得する。得られた成果を関連研究と比 較し、その意義や重要性等についてまとめる能力を養う。											
[Course objectives]											
課題設定、関連研究の調査、研究計画の立案、報告の作成などを通じて、研究活動について学ぶ。											
[Course s	chedul	e and co	ntents]								
1 ~ 4 回 5 ~ 9 回 1 0 ~ 1 2 1 3 ~ 1 5	1~4回 研究課題の設定 5~9回 先行研究の調査、報告 10~12回 設定課題の新規性、独創性等の検討 13~15回 研究計画の立案										
[Course re	equirer	nents]									
物理工学原	子核工	学コース	が指定す	「る入学	年次の	特別	研究着	手条件	‡を満たして	こいること	
[Evaluatio	n meth	nods and	policy]								
成績評価は	一連の	研究活動	の実施状	沢に基	づいて	行う	) <sub>o</sub>				
[Textbook	s]										
Not used											
[Reference	es, etc	.]									
( <b>Referer</b> 各指導教員	nce bo が紹介	<b>oks</b> ) する									
[Study outside of class (preparation and review)]											
各指導教員の指示に従うこと											
(Other information (office hours, etc.))											
*Please visit KULASIS to find out about office hours.											

Course nu	umber	U-EN	G25 4	5995 GJ77									
Course title (and course title in English)	特別研 Gradua	刮研究1(字) raduation Thesis1				Instructor name, job and depa of affiliati	Instructor's name, job title, and department of affiliation Graduate School of Engineerin Professor,ERIGUCHI KOUJI						
Target yea	<b>r</b> 4th j	year students o	or above	Number	of cred	lits 4	Yea	r/semesters	2023/Intensive, First semester				
Days and perio	ods Inte	ensive	Class	s style	Semina	ar		Language of instruction	Japanese				
[Overview and purpose of the course]													
担当教員の指導のもと,航空宇宙工学の関連分野(航空宇宙力学,流体力学,流体数理学,推進工 学,制御工学,機能構造力学,熱工学)に関する研究課題を設定し,その課題解決のための研究活 動を主体的に取り組む.この研究活動を通じて課題解決能力を習得する.得られた成果を関連研究 と比較し,その意義や重要性等についてまとめる能力を養う.													
[Course o	bjectiv	res] 南。河本	TUG		<b>*</b>		45 18 <del>4</del> 5						
課題設定,	<b>関</b> 連研	究の調査	,研到	記画の立	系,報	告の作成	なとを	通して,研究	記書を行うしていて、				
[Course so	chedu	e and co	ntent	:s]									
1~4回 研究課題の設定 5~9回 先行研究の調査,報告 10~12回 設定課題の新規性,独創性等の検討 13~15回 研究計画の立案													
[Course re	equire	nents]											
物理工学科	宇宙基	礎工学コ	ースだ	が指定する	入学年	次の特別	研究着	手条件を満た	こしていること.				
[Evaluatio	n metl	nods and	polio	¢y]									
ー連の研究	活動の	実施状況	に基つ	ブいて行う	•								
[Textbook	s]												
Not used													
[Reference	es, etc	.]											
( <b>Referer</b> 各担当教員	<b>ice bo</b> から研	oks) 究テーマ	に応し	じて指示す	る.								
[Study out	tside o	of class (p	orepa	ration and	d revie	w)]							
指示された参考書および学術論文等を学期をかけて読み進めること.													
(Other information (office hours, etc.))													
*Please visit	KULA	SIS to find	l out a	*Please visit KULASIS to find out about office hours.									

Course n	umber	U-ENG25 45995 GJ77										
Course title (and course title in English)	特別研 Graduat	究1(材 ion Thesi	) s1		Instructor's name, job title, and department of affiliation							
Target yea	<b>r</b> 4th y	ear students o	or above <b>Number d</b>	of cred	its 4	Year	/semesters	2023/Intensive, Second semester				
Days and perio	ods Inter	nsive	Class style	Semina	ır		Language of instruction	Japanese				
[Overview and purpose of the course] 担当教員の指導のもと、材料科学に関する研究課題を設定し、その課題解決のための研究活動を主 体的に取り組む。この研究活動を通じて課題解決能力を習得する。得られた成果を関連研究と比較 し、その意義や重要性等についてまとめる能力を養う。												
[Course o	bjective	es]										
 課題設定、関連研究の調査、研究計画の立案、報告の作成などを通じて、研究活動の進め方を習得 する。												
[Course s	chedule	e and co	ntents]									
[Course r	equiren	nents]										
- 物理工学科	材料科	<u>-</u> 学コース	が指定する入学	年次の	持別研究着	手条	牛を満たして	にいること				
[Evaluation	on meth	ods and	policy]									
<u>-</u> 成績は一連	の研究ネ	舌動の実	施状況、作成し	た報告	などに基づ	いて約	総合的に評価	面する。				
[Textbook	(s]											
<u>-</u> 指導教員が	個別に	指示する										
[Referenc	es, etc.	]										
( Refere	( Reference books )											
[Study outside of class (preparation and review)]												
各指導教員の指示に従うこと												
(Other information (office hours, etc.))												
指導教員と適宜相談すること												
*Please visit KULASIS to find out about office hours.												

Course nu	ımbo	er	U-EN	G25 4	5995 GJ77							
Course title (and course title in English)	特別 Gra	り研う duati	売1(エネ) on Thesis1				Instructor's name, job title, and department of affiliation			Graduate School of Energy Science Professor,HAGIWARA RIKA		
Target yea	r	4th ye	ear students	ar students or above Number of credits 4 Year/semesters 2023/Intensive, Second semester								
Days and perio	ods ]	Inter	sive	Clas	s style	Semina	ar			Language of instruction	Japanese	
[Overview	and	d pu	irpose c	of the	course]							
担当教員の指導のもと、エネルギー応用工学に関する研究課題を設定し、その課題解決のための研 究活動を主体的に取り組む。この研究活動を通じて課題解決能力を習得する。得られた成果を関連 研究と比較し、その意義や重要性等についてまとめる能力を養う。												
[Course o	bjed	ctive	es]									
課題設定、	関遉	し研究	究の調査	、研究	究計画の立	案、報	告の	)作成な	どをi	通じて、研究	『活動について学ぶ。	
[Course s	che	dule	e and co	nten	ts]							
研究課題の	設定	Ξ										
先行研究の調査、報告												
10~12回 設定課題の新規性の独創性等の検討												
13~15	回	τι	リエビリエ	~ <b>~</b> ~ ~ 1	¥0.1							
研究計画の	立案	Ē.										
[Course re	ani	irem	ents]									
bm开工学科	고 太		ients] ビー応田	丁学-	コーフが指	定する	<u>λ</u> ⇔	ケーケー	法미지	田空差壬冬也	た満たしていること	
10/11/17	ㅗ 1	~ <i>70</i> *	1 //0/13	上丁-			/\-	-+//02	יניני	们几日于示		
[Evaluatio	n m	eth	ods and	poli	cy]							
- 一連の研究	活動	力の国	実施状況	- に基:	ブいて行う	0						
[Textbook	s]											
Not used												
[Referenc	es, (	etc.]										
(Referer	nce	boo	ks)									
[Study ou	tsid	e of	class (	orepa	ration and	d revie	w)]					
各指導教員	の指	示	こ従うこ	と。								
(Other in	forn	natio	on (offic	e ho	urs, etc.) )							
*Please visit	KU	LAS	SIS to fin	d out a	about office	hours.						

Course nu	umber	U-EN	G25 459	95 GJ77					
Course title (and course title in English)	特別研究 Graduat	究1(原 ion Thesi	) s1			Instructor's name, job title, and department of affiliation		Graduate School of Engineering KANKEI KYOIN Graduate School of Engineering Professor,MIYADERA TAKAYUKI Graduate School of Engineering Assistant Professor,OGURE KENZOU	
Target yea	<b>r</b> 4th y	ear students o	or above <b>N</b>	lumber o	of cred	its 4	Year	/semesters	2023/Intensive, Second semester
Days and perio	ods Inter	nsive	Class s	style	Semina	ar		Language of instruction	Japanese
[Overview	and pu	irpose o	f the co	ourse]					
担当教員の指導のもと、原子核工学に関する研究課題を設定し、その課題解決のための研究活動を 主体的に取り組む。この研究活動を通じて課題解決能力を習得する。得られた成果を関連研究と比 較し、その意義や重要性等についてまとめる能力を養う。									
[Course objectives]									
[Course s	chedule	e and co	ntents]						
1 ~ 4 回 5 ~ 9 回 1 0 ~ 1 2 1 3 ~ 1 5	1~4回 研究課題の設定 5~9回 先行研究の調査、報告 10~12回 設定課題の新規性、独創性等の検討 13~15回 研究計画の立案								
[Course re	equiren	nents]							
物理工学科	原子核	□学コー	スが指え	定する入	学年次	の特別研究	着手夠	条件を満たし	していること
[Evaluatio	n meth	ods and	policy	]					
成績評価は	一連の	研究活動	の実施丬	伏況に基	づいて	行う。			
[Textbook	s]								
Not used									
[Referenc	es, etc.	]							
( <b>Refere</b> l 各指導教員	nce boo が紹介で	<b>iks</b> ) する							
[Study outside of class (preparation and review)]									
各指導教員の指示に従うこと									
(Other information (office hours, etc.))									
*Please visit	KULAS	SIS to find	l out abo	out office	hours.				

Course nu	umber	U-ENO	G25 4599	8 GJ77						
Course title (and course title in English)	特別研 Graduat			Inst nan and of a	tructor's ne, job tit I departn offiliation	tle, nent	Graduate School of Engineering Professor,HIRAKATA HIROYUKI			
Target yea	<b>r</b> 4th y	ear students o	r above <b>Nu</b>	ımber o	of cred	lits	6	Year	/semesters	2023/Intensive, Second semester
Days and perio	ods Inter	nsive	Class st	yle	Semina	ar			Language of instruction	Japanese
[Overview	and pu	urpose o	f the co	urse]						
担当教員の指導のもと、機械工学に関する研究課題を設定し、その課題解決のための研究活動を主 体的に取り組む。この研究活動を通じて課題解決能力を習得する。得られた成果を関連研究と比較 し、その意義や重要性等についてまとめる能力を養う。										
[Course o	bjective	es]								
課題設定、関連研究の調査、研究計画の立案、実験と検証を行う。これらの成果を特別研究として まとめ、発表することを通じて、研究活動について学ぶ。										
[Course s	chedule	e and co	ntents]							
- 設 2~10 定 1 2 二 ま 1 の の 二 は 1 5 研 に 日 定 1 5 研 の の に 3 の の の に 3 の の の の の の の の の の の	新規性、 理回め、特別での発 での書の 記	独創性 討の実施、 引研究報 表 訂正	等の再検 結果の 告書の執	証 考察、 筆、学	実験ま 土発表	たに 会の	は理論検 )ための	討の う資料(	計画の修正な 乍成	ことにより研究を遂行
[Course re	equiren	nents]								
物理工学科 ること。ま	機械シンた、特別	ステム学 引研究13	コースが を履修済	指定す みであ	る、入 ること	学年 。	三次に対	抗する	る特別研究着	<b>手条件を満たしてい</b>
[Evaluatio	on meth	ods and	policy]							
成績評価は づいて行う	二連の 。	研究活動	の実施状	況、学	士発表	会に	おける	•発表[	<b>内容、特</b> 別研	T究報告書の内容に基
[Textbook	(s]									
各研究室に	おいて打	指定する。	,							
[References, etc.]										
( <b>Refere</b> i 木下是雄「	n <b>ce boc</b> 『理科系	<b>oks</b> ) の作文技	術』(中	中央公論	<u>新社(</u> )	新書	)) ISB	N:9 <u>7</u> 84 <b>C</b>	412 <u>1</u> 0062 <u>4</u> 0 Continue to 特	別研究 2 (機) <b>(2)</b>

# 特別研究2(機)**(2)**

# [Study outside of class (preparation and review)]

各指導教員の指示に従うこと。

# (Other information (office hours, etc.))

Course number	Course number U-ENG25 45998 GJ77									
Course title (and course title in English)特別研究2(機)Instructor's name, job title, and department of affiliationGraduate School of EnglishCourse title (and course title in English)Graduation Thesis2Graduate School of English										
Target year 4th	year students or above <b>Number</b>	of credits 6	Year/semesters	2023/Intensive, First semester						
Days and periods Inte	ensive Class style	Seminar	Language of instruction	Japanese						
[Overview and purpose of the course] 担当教員の指導のもと、機械工学に関する研究課題を設定し、その課題解決のための研究活動を主 体的に取り組む。この研究活動を通じて課題解決能力を習得する。得られた成果を関連研究と比較										
し、その意義や重要性等についてまとめる能力を養う。 [										
[Course objectiv	[Course objectives]									
[Course schedu	le and contents]									
1~4回 研究課題の設定 5~9回 先行研究の調査、報告 10~12回 設定課題の新規性、独創性等の検討 13~15回 研究計画の立案										
[Course requirer	ments]									
物理工学科機械シ ること。	ステム学コースが指定す	る、入学年次に対	<b>対応した特別研究</b> 着	<b>i手条件を満たしてい</b>						
[Evaluation meth	nods and policy]									
- 成績評価は一連の	研究活動の実施状況に基	づいて行う。								
[Textbooks]										
配属研究室で指定	される。									
[References, etc	.]									
(Reference books) (参考書) 木下是雄『理科系の作文技術』(中央公論新社(新書))ISBN:9784121006240 [授										
[Study outside of class (preparation and review)]										
各指導教員の指示に従うこと。										
(Other information (office hours, etc.))										
オフィスアワーの詳細については、KULASISで確認してください。										
*Please visit KULASIS to find out about office hours.										

Course n	vse number U-ENG25 45998 GJ77										
Course title (and course title in English)	特別研 Graduat	究2(材) ion Thesis2			Instructor's name, job title, and department of affiliation			nool of Engineering URASE KUNIAKI			
Target yea	<b>r</b> 4th y	ear students or a	above Number (	of cred	<b>its</b> 6	Year	/semesters	2023/Intensive, Second semester			
Days and perio	ods Inter	nsive C	lass style	Semina	ar		Language of instruction	Japanese			
[Overview and purpose of the course]											
担当教員の指導のもと、材料科学に関する研究課題を設定し、その課題解決のための研究活動を主 体的に取り組む。得られた成果を客観的に評価し、論理に基づいて説明する能力を習得する。最終 的に研究論文としてまとめる能力を養う。											
[Course o	bjectiv	es]									
課題設定、関連研究の調査、研究計画の立案、実験と検証を行う。これらの成果を特別研究として まとめ、発表することを通じて、研究活動の進め方を習得する。											
[Course s	chedul	e and con	tents]								
設定課題の新規性、独創性等の再検証(1回) 実験の実施、結果の考察、実験計画の修正などにより研究を遂行(7回) 成果のまとめ、中間発表のための資料作成(2回) 特別研究中間発表会での発表(1回) 実験の実施、結果の考察、実験計画の修正などにより研究を遂行(2回) 特別研究報告書の執筆(2回) 上記の研究活動に加え、特別研究報告書の執筆指導を提供する。											
[Course r	eauiren	nentsl									
- 特別研究 1	を履修	済みのこと									
[Evaluatio	on meth	ods and p	olicy]								
成績評価は 容に基づい	一連の て行う。	研究活動の ,	実施状況、中	間発表	会における	発表	内容、およて	<sup>が</sup> 特別研究報告書の内			
[Textbook	s]										
指導教員が	個別に	指示する									
[Referenc	es, etc.	]									
( Refere	nce boo	oks)									
[Study outside of class (preparation and review)]											
各指導教員の指示に従うこと											
(Other information (office hours, etc.))											
各指導教員と適宜相談すること											
*Please visit KULASIS to find out about office hours.											

Course numbe	er U-EN	G25 45998 G	J77							
Course title (and course title in Grad English)	Course title (and course title in English) Humb				tle, nent	Graduate School of Energy Science Professor,HAGIWARA RIKA				
Target year	4th year students of	or above Numb	er of credit	<b>s</b> 6	Year	/semesters	2023/Intensive, Second semester			
Days and periods I	ntensive	Class style	Seminar			Language of instruction	Japanese			
[Overview and	l purpose o	of the cours	e]							
担当教員の指導のもと、エネルギー応用工学に関する研究課題を設定し、その課題解決のための研 究活動を主体的に取り組む。この研究活動を通じて課題解決能力を習得する。得られた成果を関連 研究と比較し、その意義や重要性等についてまとめる能力を養う。										
[Course objec	tives]									
課題設定、関連研究の調査、研究計画の立案、実験と検証を行う。これらの成果を特別研究として まとめ、発表することを通じて、研究活動について学ぶ。										
[Course sched	dule and co	ontents]								
1回 設定課題の新規 2~10回 実験の実施、結 11~12回 成果のまとめ、 13回 特別研究中間発 14~15回 特別研究報告書	性、独創性 課の考察、 中間発表の 読会での発 の執筆	等の再検証 実験計画の( ための資料( 表	冬正などによ 乍成	り研究を	遂行					
[Course requi	rements]									
物理工学科エネ	ルギー応用	工学コースが	が指定する入	学年次の	)特別研	开究着手条件	‡を満たしていること。			
[Evaluation m	ethods and	l policy]								
一連の研究活動 	の実施状況 	、中間発表会	会における発	表内容、	特別砥	开究報告書 <i>0</i>	D内容に基づいて行う。			
					С	ontinue to 特	別研究2(エネ) <b>(2)</b>			

# 特別研究2(エネ)**(2)**

# [Textbooks]

Not used

# [References, etc.]

 $(\ {\rm Reference\ books\ })$ 

# [Study outside of class (preparation and review)]

各指導教員の指示に従うこと。

# (Other information (office hours, etc.))
Course nu	umber	U-EN(	G25 4:	5998 GJ77							
Course title (and course title in English)	le se 特別研究 2 (原) Graduation Thesis2						tructor's ne, job tit I departm affiliation	ile, ient	Graduate School of Engineering KANKEI KYOIN Graduate School of Engineering Professor,MIYADERA TAKAYUKI Graduate School of Engineering Assistant Professor.OGURE KENZOU		
Target yea	<b>r</b> 4th y	vear students or above Number of credits 6 Year/semesters 2023/Intensive, Sec-								2023/Intensive, Second semester	
Days and perio	ods Inter	nsive	Class	s style	Semina	ar			Language of instruction	Japanese	
[Overview	and p	urpose o	f the	course]							
特別研究1 課題解決の 得られた成	特別研究1の成果を踏まえ、担当教員の指導のもと、原子核工学に関する研究課題を設定し、その 課題解決のための研究活動を主体的に取り組む。この研究活動を通じて課題解決能力を習得する。 得られた成果を関連研究と比較し、その意義や重要性等についてまとめる能力を養う。										
[Course o	bjectiv	es]									
課題設定、 まとめ、発	関連研究 表する	究の調査、 ことを通	、研9 じて、	記計画の立 研究活動	案、実につい	験と て学	≤検証を ≤ぶ。	行う。	これらの成	<b>ڈ果を特別研究として</b>	
[Course s	chedul	e and co	ntent	:s]							
1回 設定課題の新規性、独創性等の再検証 2~10回 実験の実施、結果の考察、実験計画の修正などにより研究を遂行 11回 成果のまとめ 12~14回 特別研究報告書の執筆 15回 特別研究報告会での成果発表(ポスター発表)											
[Course re	equiren	nents]									
物理工学科	原子核	工学コー	スが指	旨定する入	学年次	の特	<del></del> 劳别研究	着手夠	条件を満たし	っていること	
[Evaluatio	n meth	ods and	polic	су]							
成績評価は おける発表	一連の	研究活動 基づいて <sup>3</sup>	の実施 行う。	<b>拖状況、特</b>	別研究	報告	言書の内	容、物	寺別研究報告	言会(ポスター発表)に	
[Textbook	s]										
Not used											
[Reference	es, etc.	]									
( <b>Referer</b> Introduced d	n <b>ce boc</b> luring cl	<b>)ks )</b> ass									
[Study ou	tside o	f class (r	orepa	ration and	d revie	w)]					
各指導教員	の指示	に従うこ	と と								
(Other in	formati	on (offic	e hou	urs, etc.) )							
*Please visit	KULA	SIS to find	l out a	bout office	hours.						

Course nu	umber	U-EN	G25 4	5998 GJ77							
Course title (and course title in English)	e 特別研究2(宇) Graduation Thesis2						ructor's ne, job tit departm ffiliation	le, ient	Graduate School of Engineering Professor,ERIGUCHI KOUJI		
Target yea	<b>r</b> 4th y	rear students or above Number of credits 6 Year/semesters 2023/Intensive, Seconsemester								2023/Intensive, Second semester	
Days and perio	and periods Intensive Class style Seminar Language of instruction Japanese								Japanese		
[Overview and purpose of the course] 担当教員の指導のもと,航空宇宙工学の関連分野(航空宇宙力学,流体力学,流体数理学,推進工 学,制御工学,機能構造力学,熱工学)に関する研究課題を設定し,その課題解決のための研究活 動を主体的に取り組む.この研究活動を通じて課題解決能力を習得する.得られた成果を関連研究 と比較し,その意義や重要性等についてまとめる能力を養う.											
[Course o	bjective	es]									
課題設定,関連研究の調査,研究計画の立案,実験(シミュレーション含む)と検証を行う.これ らの成果を特別研究としてまとめ,発表することを通じて,研究活動について学ぶ.											
[Course s	[Course schedule and contents]										
1回 2~10定 2~10 2 2	新規性 ,回め1 ,回め1 , , , , , , , , , , , , , , , , , , ,	,独創性 の考察, 表のため 報告書の	等の 育 験 調 御 筆	<b>∮検証</b> 計画の修正 浮作成	などに	より	)研究を	遂行			
[Course re	equiren	nents]									
物理工学科 を修得して	宇宙基礎	礎工学コ と.	ースだ	が指定する	入学年	次の	)特別研	究着	手条件を満た	:し,特別研究1(宇)	
[Evaluatio	n meth	ods and	polie	cy]							
成績評価は て行う .	一連の	研究活動	の実放	<b>拖状況,報</b>	告会に	おけ	る発表	内容	, 特別研究報	8告書の内容に基づい	
[Textbook	s]										
Not used											
[Referenc	es, etc.	]									
(Referei 各担当教員 	<b>nce boc</b> から研覧 	oks) 究テーマ ー ー ー		ンて指示す <b></b>	3. 			c	 Continue to 特	別研究 2 (字) <b>(2)</b>	

#### 特別研究2(宇)**(2)**

[Study outside of class (preparation and review)]

指示された参考書および学術論文等を学期をかけて読み進めること.

## (Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

Course numbe	urse number U-ENG25 45998 GJ77										
Course title (and course 特別 title in Grad English)	研究 2 (材) luation Thesis2	Instr nam and of af	Instructor's name, job title, and department of affiliation								
arget year4th year students or aboveNumber of credits6Year/semesters2023/Intensive, First semesters											
Days and periods Intensive Class style Seminar Language of instruction Japanese											
[Overview and purpose of the course] 担当教員の指導のもと、材料科学に関する研究課題を設定し、その課題解決のための研究活動を主 体的に取り組む。得られた成果を客観的に評価し、論理に基づいて説明する能力を習得する。最終 的に研究論文としてまとめる能力を養う。											
[Course object	tives]										
課題設定、関連 まとめ、発表す	研究の調査、研究計画の立 ることを通じて、研究活動	□案、実験と □の進め方を	検証を行 習得する	う。これらの成 '。	<b>に果を特別研究として</b>						
[Course sched	lule and contents]										
設定課題の新規性、独創性等の再検証(1回) 実験の実施、結果の考察、実験計画の修正などにより研究を遂行(7回) 成果のまとめ、中間発表のための資料作成(2回) 特別研究中間発表会での発表(1回) 実験の実施、結果の考察、実験計画の修正などにより研究を遂行(2回) 特別研究報告書の執筆(2回) 上記の研究活動に加え、特別研究報告書の執筆指導を提供する。											
[Course requir	ements]										
特別研究1を履	修済みのこと										
[Evaluation me 成績評価は一連 容に基づいて行	<del>эthods and policy]</del> の研究活動の実施状況、中 う。	間発表会に	おける発	表内容、およひ	「特別研究報告書の内						
指導教員が個別	 に指示する										
[References, e	tc.]										
(Reference b	ooks)										
[Study outside	of class (preparation and	d review)]									
各指導教員の指	示に従うこと										
(Other inform タビ道 知昌 レ油	ation (office hours, etc.)) 宣相談すること	)									
ロコロ寺秋貝こ旭 *Please visit KUI	LASIS to find out about office	e hours.									

Course numbe	er U-EN	G25 45998 GJ′	77							
Course title (and course title in Grad English)	研究2(エ luation Thesi	ネ) s2	Ins na an of	structor's me, job tit d departm affiliation	nool of Energy Science AGIWARA RIKA					
Target year	4th year students of	r students or above Number of credits 6 Year/semesters 2023/Intensive, Fin								
Days and periods I	ds Intensive Class style Seminar Language of instruction Japanese									
[Overview and	l purpose o	of the course	]							
担当教員の指導 究活動を主体的 研究と比較し、	担当教員の指導のもと、エネルギー応用工学に関する研究課題を設定し、その課題解決のための研 究活動を主体的に取り組む。この研究活動を通じて課題解決能力を習得する。得られた成果を関連 研究と比較し、その意義や重要性等についてまとめる能力を養う。									
[Course objec	tives]									
課題設定、関連 まとめ、発表す	研究の調査 ることを通	、研究計画の じて、研究活	立案、実験の動について	と検証を 学ぶ。	行う。	これらの成	<b>ڈ果を特別研究として</b>			
[Course sched	dule and co	ontents]								
1回 設定課題の新規 2~10回 実験の実施、結 11~12回 成果のまとめ、 13回 特別研究中間発 14~15回 特別研究報告書	性、独創性 課の考察、 中間発表の 表会での発 の執筆	等の再検証 実験計画の修 ための資料作 表	正などによ 成	〕研究を	遂行					
[Course requi	rements]									
物理工学科エネ	ルギー応用	工学コースが	指定する入	学年次の	)特別硕	开究着手条件	‡を満たしていること。			
[Evaluation m	ethods and	l policy]								
一連の研究活動	の実施状況	、中間発表会	における発	表内容、 	特別 (6)	开究報告書 <i>0</i> .	の内容に基づいて行う。			
					С	ontinue to 特别	引研究2(エネ) <b>(2)</b>			

### 特別研究2(エネ)**(2)**

# [Textbooks]

Not used

## [References, etc.]

 $(\ {\rm Reference\ books\ })$ 

# [Study outside of class (preparation and review)]

各指導教員の指示に従うこと。

#### (Other information (office hours, etc.))

\*Please visit KULASIS to find out about office hours.

Course nu	umber	U-EN	G25 4:	5998 GJ77								
Course title (and course title in English)	itle rse 特別研究 2 (原) Graduation Thesis2					Instructor's name, job title, and department of affiliation			Graduate School of Engineering KANKEI KYOIN Graduate School of Engineering Professor,MIYADERA TAKAYUKI Graduate School of Engineering Assistant Professor,OGURE KENZOU			
Target yea	<b>r</b> 4th y	ear students o	or above	Number o	of cred	credits 6 Year/semesters 2023/Intensive, First set						
Days and perio	ods Inter	nsive	Class	s style	Semina	ar			Language of instruction	Japanese		
[Overview	and pu	urpose o	f the	course]								
特別研究1 課題解決の 得られた成	特別研究1の成果を踏まえ、担当教員の指導のもと、原子核工学に関する研究課題を設定し、その 課題解決のための研究活動を主体的に取り組む。この研究活動を通じて課題解決能力を習得する。 得られた成果を関連研究と比較し、その意義や重要性等についてまとめる能力を養う。											
[Course o	bjectiv	es]										
課題設定、 まとめ、発	関連研究表する	究の調査、 ことを通	、研9 じて、	計画の立 研究活動	案、実 につい	験と て学	≤検証を ≱ぶ。	行う。	これらの成	<b></b> 、 果を特別研究として		
[Course s	chedul	e and co	ntent	:s]								
1回 設正課題の新規性、独創性寺の再検証 2~10回 実験の実施、結果の考察、実験計画の修正などにより研究を遂行 11回 成果のまとめ 12~14回 特別研究報告書の執筆 15回 特別研究報告会での成果発表(ポスター発表)												
[Course re	equiren	nents]										
物理工学科	原子核	工学コー	スが打	旨定する入	学年次	の特	寺別研究	着手	条件を満たし	っていること		
[Evaluatio	n meth	ods and	polic	⊳y]								
成績評価は おける発表	ー連の 内容に	研究活動 基づいて <sup>3</sup>	の実施 行う。	拖状況、特	別研究	報台	皆書の内	容、1	洔別研究報 <b>告</b>	会(ポスター発表)に		
[Textbook	s]											
Not used												
[Reference	es, etc.	]										
( <b>Referer</b> Introduced d	n <b>ce boc</b> luring cl	<b>oks</b> ) ass										
[Study ou	tside of	f class (p	orepa	ration and	d revie	w)]						
各指導教員	の指示	こ従うこ	2									
( Other in	formati	on (offic	e hou	urs, etc.) )								
*Please visit	KULAS	SIS to find	l out a	bout office	hours.							

Course nu	umber	U-E	ENG26 16	5063 LJ72							
Course title (and course title in English)	le se 電気回路基礎論 Fundamentals of Circuit Theory						tructor's ne, job tit I departm affiliation	tle, nent	Graduate School of Engineering Associate Professor,HISAKADO TAKASHI		
Target yea	<b>r</b> 1	st year studer	r students or above Number of credits 2 Year/semesters 2023/First sem								
Days and peric	ods Tu	ue.5	Class	s style	le Lecture Language of instruction Japanese						
[Overview	and	purpose	e of the	course]							
The course i networks; in 2-port circui	ntrodu deper ts.	uces the f ndent sour	undament ces; swite	tals of the e ches and dy	electric of namics	circu of f	uit. Topi first- and	ics cov 1 secoi	vered include: nd-order netw	resitive elemnts and orks; phasor analysis;	
[Course o	bject	ives]									
Students are phasor.	expe	cted to lea	arn the tra	ansient anal	ysis by	diff	erential	equati	on and steady	v state analysis by	
[Course s	ched	ule and	content	s]							
and independ Differential equation of of AC circuit,4 two-port circ academic ac	dent s equati circuit times cuit,2t hieve	ources. ion of circ t. ,We intro times,We ment test,	cuit,5time duce phas extend oi 1time,Th	es,We intro sor and exp ne-port eler e level of u	duce ind lain the nents to nderstar	lucto stea two ndin	ors and ady state p-port ci ag on thi	capaci e analy frcuits. s lectu	tors and expla rsis. re will be cor	ain the differential	
[Course re	equir	ements]									
None											
[Evaluatio	n me	ethods a	nd polic	;y]							
Reports and	exam	inations									
<b>[Textbook</b> 奥村浩士『	s] ゚エー	ス電気回	]路理論/	入門』(朝	]倉書店	) I	SBN:42	54227	469		
[Reference	es, e	tc.]									
(Referer	nce b	ooks)									
[Study out	tside	of class	s (prepa	ration and	d revie	w)]					
After the les	son, s	olve prob	lems in th	he text.		_					
( Other inf	forma	ation (of	fice hou	ırs, etc.) )							
Please visit KULASIS to find out about office hours.											

											未更新
Course nu	ımbe	er 🛛	U-EN	G29 39	025 LJ10	U-EN	G29	39025	LJ55		
Course title (and course title in English)						Instructor's name, job title, and department of affiliation				ool of Informatics sor,YOSHIKAWA HITOSHI	
Target year2nd year students or aboveNumber of credits2Year/semesters2023/Second									2023/Second semester		
Days and periods Wed.3 Class style Lecture Language of instruction Japanese								Japanese			
[Overview	and	l pur	pose c	of the c	ourse]						
[Course o	bjec	tives	5]								
[Course s	chec	dule a	and co	ontents	5]						
,1time,											
,6times,											
,3times,											
.1time.											
,,											
[Course re	equii	reme	nts]								
None											
[Evaluatio	n m	etho	ds and		/]						
-					-						
[Textbook	s]										
[Reference	es, e	etc.]									
( Referer	nce k	book	. <b>S</b> )								
[Study ou	tside	e of c	lass (	prepara	ation and	d revie	w)]				
(Other in	form	atior	n (offic	e hour:	rs, etc.) )	)					
*Please visit	KUI	LASI	S to fin	d out ab	out office	hours.					

										未更新
Course nu	umber	U-EN	329 4 <u>9</u>	9118 LJ10	U-EN	G29	49118	LJ55		
Course title (and course title in English) 数理解析 Analysis in Mathematical Sciences						Instructor's name, job title, and department of affiliation				nool of Informatics ssor,YOSHIKAWA HITOSHI
Target yea	At year students or above Number of credits 2 Year/semesters 2023/First se								2023/First semester	
Days and perio	ods Thu	1.4	4 Class style Lecture Language of instruction Japanese							Japanese
[Overview and purpose of the course]										
	hiacti	veel	_							
	bjeen	103]								
[Course s	chedu	ile and co	ntent	s]						
,5times, ,5times, ,2times, ,1time, ,1time, ,1time, ,1time,	Stimes, Stimes, 2times, 1time, 1time, 1time,									
[Course re	equire	ments]								
None										
[Evaluatio	on met	hods and	polic	;y]						
[Textbook	s]									
[Referenc	es, et	c.]								
( Referei	nce bo	ooks)								
[Study ou	tside	of class (p	orepa	ration and	d revie	w)]				
( Other in	forma	tion (offic	e hou	ırs, etc.) )	)					
*Please visit	t KUL	ASIS to find	l out a	bout office	hours.					