科目コード (Code)	科目名 (Course title)	Course title (English)
10G001	応用数値計算法	Applied Numerical Methods
10G003	固体力学特論	Solid Mechanics, Adv.
10G005	熱物理工学	Thermal Science and Engineering
10G007	基盤流体力学	Introduction to Advanced Fluid Dynamics
10G009	量子物性物理学	Quantum Condensed Matter Physics
10G011	設計生産論	Design and Manufacturing Engineering
10G013	動的システム制御論	Dynamic Systems Control Theory
10G057	技術者倫理と技術経営	Engineering Ethics and Management of Technology
10G203	マイクロプロセス・材料工学	Microprocess and Micromaterial Engineering
10G205	マイクロシステム工学	Microsystem Engineering
10G211	物性物理学1	Solid State Physics 1
10G223	マイクロエンジニアリング基礎セミナーA	Basic Seminar on Micro Engineering A
10G224	マイクロエンジニアリング基礎セミナーB	Basic Seminar on Micro Engineering B
10B418	先進材料強度論	Strength of Advanced Materials
10G214	精密計測加工学	Precision Measurement and Machining
10V003	バイオメカニクス	Biomechanics
10V201	微小電気機械システム創製学	Micro Electro Mechanical System Creation
10G041	有限要素法特論	Advanced Finite Element Method
10W603	医工学基礎	Introduction to Biomedical Engineering
10B617	量子分子物理学特論	Quantum Theory of Molecular Physics
10V205	物性物理学2	Solid State Physics 2
10i056	現代科学技術特論(8回コース)	Advanced Modern Science and Technology(8 times course)
10X411	複雑系機械システムのデザイン	Design of Complex Mechanical Systems
10X402	アーティファクトデザイン論	Theory for Designing Artifacts
10G061	応用数理科学	Applied mathematical sciences
88G101	研究倫理・研究公正 (理工系)	Research Ethics and Integrity(Scienceand Technology)
88G104	知的財産	Intellectual Property
10G049	インターンシップM(機械工学群)	Engineering Internship M
10G226	マイクロエンジニアリング特別実験及び演習第一	Experiments on Micro Engineering, Adv. I
10G228	マイクロエンシ゛ニアリンク゛特別実験及び演習第二	Experiments on Micro Engineering, Adv. II
10G058	複雑系機械工学基礎セミナー1	Basic Seminar of Complex Mechanical Engineering,1
10G059	複雑系機械工学基礎セミナー2	Basic Seminar of Complex Mechanical Engineering,2

Numbering	code											
Course title ∠English>	芯用数 Applied	値計算法 Numerica	al Me	thods		Aff dep Job	iliated partment p title,Na	i, me	Gra Pro Gra Ass	aduate Scho ofessor,INO aduate Scho ociate Profess	ol of Engineering UE YASUHIRO ol of Engineering or,TSUCHIYA TOSHIYUKI	
Target yea	r			Number	of cred	lits	2	Co yea	ours ar/p	e offered eriod	2019/First semester	
Day/period	Mon	1	Cla	ss style	Lecture	e				Language	Japanese	
[Outline an	d Purr	oose of t	he C	ourse]								
Numerical in mechanical advanced met (Ax=b), eiger and partial dif	Numerical techniques, such as the finite element method and numerical control method, are indispensable n mechanical engineering. In this lecture, basics of numerical techniques which are required to study advanced methods for graduated students will be explained. The lecture will cover the linear system solution (Ax=b), eigenvalue analysis, interpolation approximation method, solutions of ordinary differential equation and partial differential equation. The programing exercise is included in this lecture.											
[Course Go	[Course Goals]											
Understandin	Understandings of mathematical theories and programing implementations of the numerical methods.											
[Course Sc	hedul	e and Co	onten	ts]								
Introduction, I spread sheet a Linear system Linear simult method Eigenvalue ar Interpolation Numerical int Normal differe problem, bour Partial differe equation\\Pois Examination,	[Course Schedule and Contents] Introduction, ltime, Introduction of this class\\Numerical representations and errors\\Macro programing using spread sheet applications Linear system, ltime, Matrix\\Norms\\Singular value decomposition Linear simultaneous equation 1,2times, Solution of simultaneous linear equations\\direct method, iteration nethod Eigenvalue analysis, 2times, Eigenvalue problems Interpolation ,2times, Interpolation and its errors Numerical integra 1 ,2times, Numerical integration methods Normal differential equation and numerical integral, 1time, explicit method, implicit method\\ initial value problem, boundary value problem Partial differential equation, 3times, Differential expression of partial differential\\ Diffusion equation, wave equation\\Poisson equation, Laplace equation Examination, 1time, Feedback for homework and examination											
Resignation	[Class requirement]											
Basic macro	Basic macro programing											
[Method, P	oint of	ⁱ view, ai	nd At	tainment	levels	of E	valuat	ion]			
Home works	(four he	ome work	s will	be assigned	1) and ex	xam	ination.					

未更新

_____Continue to 応用数値計算法(2)

応用数値計算法**(2)**

[Textbook]

Lecture note will be distributed through the course website.

[Reference books, etc.]

(Reference books)

Golub, G. H. and Loan, C. F. V., Matrix Computations, John Hopkins University Press\R.D.Richtmyer and K. W.Morton, Difference Methods for Initial-Value Problems, Second Edition, John Wiley amp Sons 1967

(Related URLs)

(Lecture notes, home works, and other info will be distributed through PandA: https://panda.ecs.kyoto-u.ac. jp)

[Regarding studies out of class (preparation and review)]

Problems are based on macro on Microsoft Excel or LibreOffice.

(Others (office hour, etc.))

Have a PC with Microsoft Excel with VBA or LibreOffice (https://ja.libreoffice.org/).

	lumbering code											
Numbering	Numbering code Affiliated Graduate School of Engineering											
Course title <english></english>	固体 Solid	力学特論 l Mechanics,	Adv.			Aff dej Joi	iliated partment p title,Na	, I me A	Graduate Scho Professor,HIR Graduate Scho Associate Profes	ol of E AKAT ol of E sor,SHI	ngineering A HIROYUKI ngineering MADA TAKAHIRO	
Target yea	ar			Number	of cred	lits	2	Cou year	rse offered /period	2019	/First semester	
Day/perio	d Tł	hu.1	Cla	ss style	Lecture	e			Language	Japan	iese	
[Outline ar	nd P	urpose of t	he C	ourse]								
This course p and methods concepts. In their numeric mechanical s	and methods for analyzing stress/strain fields and deformation of solids and structures on the basis of the concepts. In particular, the course lectures theories of nonlinear problems such as plasticity and creep, and their numerical solutions, or finite element methods, which are important for design and development of mechanical structures.											
[Course G	oals]										
[Course Goals] Students will be able to: understand solid mechanics deeply and acquire basic knowledge to design mechanical structures. analyze problems of plasticity and creep by finite element methods.												
[Course Se	chec	Jule and Co	onten	its]								
Introduction, Stress, 1 time, Deformation Lagrange-Gr Constitutive Principle of of minimum Finite elemene equations, El Plasticity pro- hardening ru Creep proble for creep pro- Summary, 1 ti Feedback, 1 ti	1 tim Cauc ,2 tim reen s equa virtua poter themer blem le, co ems,2 blem ime,I me	e,Overview of thy stress ten les,Material of strain and Eu- tion: linear ef al work and p ntial energy ethod for line nts, Numerica hs,3times,Pla postitutive eq times,Creep hs Discussions a	of soli sor, E lescri ler-Al lastici princip ar ela al inte sticity uation theory nd rep	d mechanic quilibrium ption and sp mansi strain ty,1time,Li ole of minin sticity,3time gration theory (un ns), Finite e y (uniaxial a ports	s equation patial de n, Infinit near elas num pot es,Basis iaxial ar lement r and mult	n, In scrij tesir stic enti of f nd m meth tiaxi	variants ption, D nal strai stress-st al energ inite ele nultiaxia nod for e al const	isplac in, Ma rain i y,1tir ement l prob elasto itutiv	cement, Defo aterial time d response, Hoo ne,Principle o method, Fin blems, yield o plastic probl e equations),	mation erivativ kersqu f virtua te elem riteria, ems Finite e	gradient, e os law al work, Principle nent equilibrium flow rule, element method	
[Class requirement]												
This course r	equi	res basic kno	wledg	ge of mecha	nics of 1	mate	erials an	d soli	d mechanics.			
[Method, F	Point	t of view, a	nd At	tainment	levels	of E	Valuat	ion]				
Grading is ba	ased	on the exami	natio	n, possibly v	with con	side	erations	of the	e homework i	eports.		
[Textbook]]											
Lecture mate	<tbook]< th=""> Extbook] ecture materials are distributed in the classroom.</tbook]<>											

Continue to 固体力学特論(2)

固体力学特論**(2)**

[Reference books, etc.]

(Reference books)

T. Kyoya, Continuum Mechanics, Morikita (2008) (in Japanese)\ Y. Tomita, ldquoFoundation and Application of Elastoplasticityrdquo Morikita (1995) (in Japanese)\ E. Neto et al., ldquoComputational Methods for Plasticity,rdquo John Wiley amp Sons (2008).

[Regarding studies out of class (preparation and review)]

Preparation and review of lecture materials. Exercises.

(Others (office hour, etc.))

Numberin	g code											
Course title <english></english>	熱物理 Therma	工学 dl Science	and E	Engineering		Aff dep Job	iliated partment p title,Na	t, ime	Gra Pro Gra Asso	iduate Scho fessor, YOS iduate Scho ociate Professor	ol of Engineering HIDA HIDEO ol of Engineering r,MATSUMOTO MITSUHIRO	
Target ye	ar			Number	of cred	lits	2	Co yea	ourse ar/pe	e offered eriod	2019/First semester	
Day/peric	d Mon	3	Cla	iss style	Lecture	e				Language	Japanese	
[Outline a	nd Pur	pose of t	he C	ourse]								
Several topi process and applications	cs in adv related t in globa	vanced the copics are g al enviroin	rmal j given ment	physics are . From mac s and hydro	discusse roscopic ogen ener	ed. F : one rgy a	From mi es, after are desc	the the	scopi conc ed.	ic view poin cept of entro	nts, basics of stochastic opy is revisited,	
[Course G	ioals]											
Microscopic Macroscopi	Vicroscopic Viewpoints: Ability of multi-scale modelling Macroscopic Viewpoints: Ability of global environment modelling											
[Course S	[Course Schedule and Contents]											
 (M) Spectra (M) Stochas (Y) Science (Y) Science (Y) Science (Y) Science 	 M) Transport Phenomena and Correlation Functions, 1time, M) Spectral Analysis and Fractal Analysis, 2times, M) Stochastic Process and Its Applications, 3times, Y) Science of Atmosphere and Ocean, 5times, Y) Science of Hydrogen Energy, 1time, Y) Science of Nuclear Energy, 1time, Check and feedback, 1time, 											
[Class rec	quireme	∍nt]										
Elementary	thermod	ynamics, S	Statis	tical physic	s, Heat t	rans	fer engi	inee	ering,	, Numerical	l analysis etc.	
[Method,	Point o	f view, a	nd Af	ttainment	levels	of E	valuat	tion]			
Reports												
[Textbook	<]											
handout												
[Referenc	e book	s, etc.]										
(Refere Introduced of	(Reference books) Introduced during class											
[Regardin	g studi	es out of	f clas	ss (prepar	ation a	nd	review)]				
Not necessa	ry											
(Others (office h	our, etc.))									
(2018) Matsumoto Yoshida: Ju	: April 8 1ne 3 ~ J	- May 22 uly 22	27									

												未	更新
Numbering	j coc	de											
Course title <english></english>	基盤 Intro	i流体力 oductior]学 n to Ad	vanc	ed Fluid Dy	namics	Aff der Jol	iliated oartment o title,Na	, me	Gra Prot Gra Pro: Gra Pro:	duate Schoo fessor,INAM duate Schoo fessor,HAN duate Schoo fessor,TAK	ol of Engineerin MURO TAKAJJ ol of Engineerin AZAKI HIDES ol of Engineerin ATA <u>SHIGERI</u>	.g [g J J
Target ye	ar				Number	of cred	its	2	Co yea	urse ar/pe	eriod	2019/First sem	nester
Day/perio	d F	ri.1		Cla	ss style	Lecture	e				Language	Japanese	
[Outline a	nd P	urpos	e of th	ie C	ourse]								
[Course G	oals	5]											
[Course S	che	dule ar	nd Co	nten	ts]								
, 5 times, , 5 times, , 4 times, , 1 times,													
[Class req	uire	ment]											
None													
[Method, F	oin	t of vie	ew, an	d At	tainment	levels	of E	valuat	ion]			
[Textbook	j												
[Reference	e bo	oks, e	tc.]										
(Referer	ice I	books)										
[Regarding	g st	udies (out of	clas	s (prepara	ation a	nd	review)]				
(Others (offic	e hou:	r, etc.))									
*Please visit	KU	LASIS	to find	out #	about office	hours							

												未更新
Numbering	g coo	Je										
Course title <english></english>	量子 Qua	⁻ 物性物 ntum C	勿理学 Conden	sed M	latter Physic	cs	Affi dep Jot	iliated partment b title,Na	i, me	Grad Prof Grad Asso Grad Sent	duate Schoo fessor,HAS duate Schoo ociate Profes duate Schoo ior Lecture	ol of Engineering UO MASAHIRO ol of Engineering sor,NAKAJIMA KAOR ol of Engineering r,SENAMI MASATO
Target ye	ar				Number	of cred	its	2	Co yea	ourse ar/pe	e offered eriod	2019/First semester
Day/perio	d T	`hu.2		Cla	ss style	Lecture	e				Language	Japanese
[Outline a	nd F	'urpos	e of t	he C	ourse]							
[Course G	oals	5]										
[Course S	che	dule a	nd Co	nten	its]							
,3times, ,3times, ,4times, ,1time, ,1time, ,1time, ,1time, ,1time,												
[Class rec	quire	ment]										
None												
[Method, I	Poin	t of vie	ew, ar	nd At	tainment	levels	of E	zvaluat	ion]		
[Textbook	(]											
[Referenc	e bo	oks, e	tc.]									
(Referei	nce	books)									
[Regardin	g st	udies	out of	clas	s (prepar	ation a	nd I	review)]			
(Others (offic	e hou	r, etc.))								
*Please visit	t KU	LASIS	to find	out	about office	hours.						

Numbering	g code]								
Course title <english></english>	設計生 Design	上産論 n and Manu	factu	ring Engine	ering	Af de Jo	filiated partment, b title,Nai	, me	Gra Pro Gra Ass Gra Senio	duate Schoo fessor,MAT duate Schoo ociate Profe duate Schoo r Lecturer,BEA	ol of Engineering CSUBARA ATSUSHI ol of Engineering essor,IZUI KAZUHIRO ol of Engineering UCAMP, Anthony Tadeus Herve
Target ye	ar			Number	of cred	lits	2	Co ye	ourse ar/p	eriod	2019/First semester
Day/perio	d Fri.	.2	Cla	iss style	Lecture	e				Language	Japanese
[Outline a	nd Pu	rpose of t	he C	ourse]							
[Course G	ioals]										
[Course S	chedu	le and Co	onter	nts]							
,2times, ,2times, ,3times, ,2times, ,3times, ,2times, ,1time,											
[Class rec	Juirem	ient]									
None											
[Method, I	Point	of view, ar	nd Af	ttainment	levels	of I	Evaluati	ion]		
[Textbook	<]										
[Referenc	e boo	ks, etc.]									
(Referei	າce bc	ooks)									
[Regardin	g stuc	lies out o	i clas	ss (prepar	ation a	nd	review))]			
(Others (office	hour, etc.))								
*Please visit	t KULA	ASIS to find	l out a	about office	hours.						

													未更新
Numbering	g coc	de											
Course title <english></english>	動的 Dyn	Jシス amic	、テム制 Systems	卸論 ; Conf	trol Theory		Aff der Jot	iliated partment b title,Na	^I , me	Gra Prot Gra Sen Gra Pro	duate Schoo fessor,SAW duate Schoo ior Lecturer, duate Schoo fessor,FUJI	ol of Engi ARAGI 7 ol of Engi NAKANI ol of Engi MOTO K	neering FETSUO neering SHI HIROAKI neering ENJI
Target ye	ar				Number	of cred	lits	2	Co yea	urse ar/pe	eriod	2019/Fir	st semester
Day/perio	d T	ue.2		Cla	ss style	Lecture	e				Language	Japanese	
[Outline a	nd F	' urpo	ose of t	he C	ourse]								
[Course G	ioals	5]											
[Course S	che	dule	and Cc	onten	its]								
,5times, ,5times, ,4times, ,1time,													
[Class red	luire	men	nt]										
None													
[Method, I	Poin	t of	view, ar	nd Af	tainment	levels	of E	valuat	ion]			
[Textbook	[]												
[Reference	e bo	oks,	, etc.]										
(Referer	ice I	book	(S)										
[Regardin	g st	udie	s out of	clas	s (prepara	ation a	nd	review)]				
(Others (offic	e ho:	our, etc.))									
*Please visit	t KU	LASI	IS to find	l out a	about office	hours.							

Numbering	g co	de									
Course title <english></english>	技術 Engi	5者倫理と技 neering Ethics an	術経 d Mana	ゴ agement of Tea	chnology	Aff de Joi	iliated partment b title,Na	:, ime	Gra Pro Gra Gra Pro Gra Pro Gra Ass	aduate Schoo ofessor,SAW aduate Schoo ofessor,TOM aduate Schoo ofessor,KOM aduate Schoo ofessor,MAT aduate Schoo ofessor,MAT	ol of Engineering VARAGI TETSUO ol of Engineering NAKANISHI HIROAKI ol of Engineering IITA NAOHIDE ol of Engineering IORI MASAHARU ol of Engineering SUBARA ATSUSHI ol of Engineering or,TSUCHIYA TOSHIYUKI
Target ye	ar			Number	of cred	lits	2	Co yea	urs ar/p	e offered eriod	2019/First semester
Day/period Thu.3 Clas			ss style	e Lecture					Language	Japanese	

[Outline and Purpose of the Course]

Basic knowledge of Engineering Ethics and Management of Technology needed for future project leaders in companies and society is taught. Students have to make group work after-class hours as well as presentations of wrapping-up the discussions. Engineering ethics is the field of applied ethics and system of moral principles that apply to the practice of engineering. The field examines and sets the obligations by engineers to society, to their clients, and to the profession. Management of Technology is a set of management disciplines that allows organizations to manage their technological fundamentals to create competitive advantage. This course consists of lectures, exercises, discussions and oral presentations under supervision of professional faculties and extramural lecturers.

[Course Goals]

To cultivate a spirit of self-sufficiency needed for engineers

[Course Schedule and Contents]

Engineering Ethics,9times,1. Introduction to Engineering Ethics (EE)\\2.Medical Engineering Ethics\\3.EE by Institution of Professional Engineers, Japan and abroad\\4.Product Safety and Product Liability\\5. Comprehensive Manufacturing and EE (1) \\6.Comprehensive Manufacturing and EE (2)\\7.Group Discussions\\8.History and Philosophy of EE\\9.Presentation on exercise of EE Management of Technology,5times,1.Product Portfolio, Strategy for Competition\\2.Bussiness Domain and MOT for Marketing\\3. Organizational Strategy for Corporates#039 R amp D\\4. Management Theory for R amp D\\5.Presentation on exercise of MOT Summary,1time,

[Class requirement]

Nothing particular

未更新

技術者倫理と技術経営**(2)**

[Method, Point of view, and Attainment levels of Evaluation]

Submission of reports and presentations

[Textbook]

No textbook

[Reference books, etc.]

(**Reference books**) Nothing

(Related URLs)

(No Web Site)

[Regarding studies out of class (preparation and review)]

(Others (office hour, etc.))

Nothing particular

											未更新
Numbering	g cod	de									
Course title <english></english>	マ1 Mici	イクロプロセ roprocess and	ス・フ Microi	材料工学 material Eng	ineering	Afi de Jo	filiated partment b title,Na	i, Ime	Graduat Professo Graduat Associate Graduat Associate Graduat Assistan	te Schoo or,TAB, te Schoo e Professo te Schoo e Profess te Schoo tt Profess	ol of Engineering ATA OSAMU ol of Engineering or,TSUCHIYA TOSHIYUKI ol of Engineering or,YOKOKAWA RYUUJI ol of Engineering sor,URABE KEIICHIRO
Target ye	ar			Number	of crec	lits	2	Co yea	ourse off ar/perio	iered d	2019/First semester
Day/perio	d N	Aon.4	Cla	iss style	Lectur	e			Lan	guage	Japanese
[Outline a	nd F	ourpose of	the C	ourse]	-						
Micro/nano be photolithe machining a	fabri ograj .nd fu	cation proces phy, dry-etch urther advanc	sses ar ing, th ed pol	ıd materials ıin-film dep lymer proce	used to osition, ossing.	rea whi	lize mic ich inclu	ro/n ides	ano syst bulk mie	ems are cro mac	described. Topics will hining, surface micro
[Course G	ioals	s]									
To obtain fu recent fabric	obtain fundamental knowledge about design and fabrication of micro/nano systems and to be familiar with ent fabrication technologies and micro/nano systems.										
[Course S	ourse Schedule and Contents]										
Thin-film pr Silicon micr 3D lithograp Soft-microm Feedback,1t	miconductor microfabrication,3times,Describe about the semiconductor microfabrication techniques. in-film process and evaluation,3times,Describe about the thin-film process and evaluation techniques. licon micromachining,3times,Describe about the silicon micromachining techniques.) lithography,3times,Describe about the 3D lithography techniques. oft-micromachining,2times,Describe about the soft-micromachining techniques. edback,1time,										
Loass req	luire	entj									
None								-			
[Method, I	Poin	it of view, a	nd A	tainment	levels	of E	Evaluat	ion]		
Evaluated by	y nor	mework. All 1	report	must be sut	omitted	to o	btain cre	edits	s.		
[Textbook	[]										
[Referenc	e bo	ooks, etc.]									
(Referer	(Reference books)										
[Regardin	g st	udies out o	f clas	ss (prepar	ation a	nd	review)]			
(Others (offic	e hour, etc:	.))								
Students unf presentation	iamil slide	liar with Japa es, homeworl	nese n c, and	nay enroll in other additi	n this co ional cor	ourse	e. Their materia	less ls ir	sons will n English	be supp 1.	lemented with
*Diana visi	sentation slides, homework, and other additional course materials in English.										

Numbering	g cod	de								
Course title <english></english>	マ1 Mic	イクロシステ rosystem Eng	ム ⊥≛ ineeri	ž ng		Affi dep Job	iliated partment, p title,Nar	G Pr G As G As Ins Se In As	raduate Schoo rofessor,TAB raduate Schoo ssociate Professo raduate Schoo ssociate Profess stitute for Frontio enior Lecturer,C sstitute for Ad ssociate Profess	ol of Engineering ATA OSAMU ol of Engineering r,TSUCHIYA TOSHIYUKI ol of Engineering or,YOKOKAWA RYUUJI er Life and Medical Sciences DKEYO, Kennedy Omondi vanced Study or,KAMEI KENICHIROU
Target ye	Number	of cred	its	2	Cour year/	se offered period	2019/Second semester			
Day/perio	d F	ri.5	ss style	Lecture	e			Language	English	
[Outline a	utline and Purpose of the Course]									

Microsystem covers not only technologies related to individual physical or chemical phenomenon in micro scale, but also complex phenomena which are eveolved from their interaction. In addition, its fusion with nanotechnology and biotechnology, named Nanobio-technology is being studied.

In this course, the physics and chemistry in micro and nanoscale will be lectured in contrast to those in macro scale. The various kinds of application devices (ex. physical (pressure, flow, force) sensors, chemical sensors, biosensors, actuators (piezoelectric, electrostatic, and shape memory), bio (molecular sensing, protein, manipulation of DNA and cell) and their system are discussed.

[Course Goals]

Understand the theory of sensing and actuating in microsystem. Acquire basic knowledge to handle various kinds of phenomena in microscale.

In addition, understand principles in nanotechnology and bioscience, and aquire knowledge of technologies for realizing microsystem and nanobio devices.

[Course Schedule and Contents]

*MEMS modeling and simulation, 3times

Multi-physics modeling in microscale. Electro-mechanical coupling analysis. System level simulation in MEMS.

* Microsystem,4times

Electrostatic, piezoresistive, thermal, piezoelectric, electromagnetic sensors and actuators. Theory and application devices, such as physical sensors, chemical sensors and optical devices.

* Micro total analysys system, 4times

Chemical analysis system and bio-sensing device using microsytem.

* Nano bio system, 4 times

Application of Bio MEMS and micro-TAS to life science, medical science, and biomedical engineering.

[Class requirement]

Students are required to take the 10G203 course Micro Process and Material Engineering.

Continue to マイクロシステム工学(2)

マイクロシステム工学**(2)**

[Method, Point of view, and Attainment levels of Evaluation]

The evaluation will be based on the reports given in each lecture.

[Textbook]

Provided in the lecture.

[Reference books, etc.]

(Reference books)

Provided in the lecture.

[Regarding studies out of class (preparation and review)]

Lectures are related to 10V201 Introduction to the Design and Implementation of Micro-Systems.

(Others (office hour, etc.))

The student can register only to this class 10G205, but it is required to be able to take consecutive classes at Friday 4th and 5th. Those students who want to take this course has to contact Prof. Tsuchiya (tutti@me. kyoto-u.ac.jp) by the end of 1st term. The student of this class is strongly recommended to take a course 10V201 Introduction to the Design and Implementation of Micro-Systems(10V201), which is a practice for designing microsystem. Those who want to take 10V201 have to take training course for CAD in advance.

										未更新
Numbering	Numbering code									
Course title <english></english>	物性物 Solid S	」 団理学 1 State Physic	es 1			Affiliated departme Job title,N	nt, Iame	Gra Pro Gra Ass	aduate Scho fessor,SUZ aduate Scho ociate Profes	ol of Engineering UKI MOTOFUMI ol of Engineering ssor,NAKAJIMA KAOR
Target yea	ar			Number	of cred	its 2	Co ye	ourse ar/p	e offered eriod	2019/Second semeste
Day/period	Wed	1.1	Cla	ss style	Lecture	•			Language	Japanese
[Outline an	d Pur	rpose of t	he C	ourse]						
[Course Go	oals]									
[Course So	hedu	le and Co	onten	its]						
,1time, ,1-2times, ,1time, ,1time, ,1-2times, ,1time, ,1time, ,1time, ,1time, ,1time, ,1time, ,1time, ,1time, ,1time, ,1time, ,1time, ,1time, ,1time,										
[Class requ	uirem	ent]								
None										
[Method, P	oint c	of view, a	nd At	tainment	levels o	of Evalua	ation	ן		
[Textbook]										
[Reference	book	(s, etc.]								
(Referen	ce bo	oks)								
							• •	Co	ontinue to	

物性物理学 1 **(2)**

[Regarding studies out of class (preparation and review)]

(Others (office hour, etc.))

									未更新			
Numbering	g cod	le										
Course title <english></english>	マイ Basi	クロエンジニ c Seminar on	アリ: Micr	ング基礎セミ o Engineeri	ミナーA ng A	Affiliated department Job title,Na	, me	Graduate Scho Professor,MA	ol of Engineering ΓSUBARA ATSUSHI			
Target ye	ar			Number	of credi	ts 2	Cou year	r/period	2019/Intensive, First semester			
Day/perio	dI	ntensive	Cla	ss style	Seminar	r		Language	Japanese			
[Outline a	nd P	Purpose of t	he C	ourse]								
[Course Goals]												
[Course S	che	dule and Co	nter	its]								
,10times,				_								
,5times,												
[Class rec	luire	ment]										
None												
[Method, I	Poin	t of view, a	nd At	tainment	levels o	of Evaluat	ion]					
[Textbook	k]											
[Referenc	e bo	oks, etc.]										
(Refere	nce I	books)										
[Regardin	g sti	udies out of	clas	ss (prepara	ation ar	nd review)]					
(Others (offic	e hour, etc.))									
*Please visit	t KUl	LASIS to find	louta	about office	hours.							

Numbering	g code	•									
Course title <english></english>	マイク Basic	フロエンジニ Seminar on	アリ: Micr	ング基礎セ o Engineeri	ミナーB ng B	Affil depa Job	liated artment title,Na	, me	Grad Profe	luate Scho essor,MAT	ol of Engineering TSUBARA ATSUSHI
Target ye	ear			Number	of cred	lits	2	Co yea	ourse ar/per	offered riod	2019/Intensive, Second semester
Day/perio	d In	tensive	Cla	ss style	Semina	ar			L	anguage	Japanese
[Outline a	nd Pı	irpose of t	he C	ourse]							
[Course G	ioals]										
[Course S	ched	ule and Co	onter	its]							
,10times, ,5times,											
			_			_		_			
Liass rec	quiren	nentj									
ivone											
[Method, I	Point	of view, a	nd At	tainment	levels	of E	valuat	ion]		
[Textbook	k]										
[Referenc	e boc	ks, etc.]									
(Referei	nce b	ooks)									
[Regardin	g stu	dies out o	f clas	s (prepar	ation a	nd r	eview)]			
(Others (office	hour, etc.))								
*Please visit	t KUL	ASIS to find	l out a	about office	hours.						

Numbering code Affinited department, job titleAdm Graduate School of Engineering Professor.HDUITYOU MASAKI Graduate School of Engineering Associate Professor.NISIIKAWA MASAKI Oraduate School of Engineering Associate Professor.NISIIKAWA MASAKI Day period Target year Number of credits 2 Curse offered year/period 2019.Second semester Day/period Thu.2 Class style Lecture Language Japanese Course offered year/period Inu.2 Class style Lecture Language Japanese Course offered or arcraft structure etc., are introduced, with a detailed description of the relationship between microscopic constituent materials and macroscopic properties from the perspective of multiscale mechanics; also the anisotropy of their properties, their fatigue and fracture properties are described in the basic discipline for strength of materials. The latest applications are introduced in the field of various transportation systems neluding airplanes. Course Cools The course goal is to understand basic concepts of composite materials and the underlying mechanism of heir mechanical properties from multiscale viewpoints, while the phsyical understanding of composites is leveloped based on multiple disciplines. Course of composite materials.2times. The concept and definition of composite materials, their constituent naterials and manufacturing methods are illustrated. Their application to aicraft structures etc. are also incoduced. Methodical properties of microscopic constituent materials, pori												未更新		
Course title 先進材料強度論 Strength of Advanced Materials Affiliated department, i.b. bitle.Nam Graduate School of Engineering Associate Professor, NUSHIKAWA MASAAKI Graduate School of Engineering Associate Professor, NUSHIKAWA MASAAKI Craduate School of Engineering Associate Professor, NUSHIKAWA MASAAKI Craduate School of Engineering Associate Professor, NUSHIKAWA MASAAKI Craduate School of Engineering Associate Professor, NUSHIKAWA MASAAKI Course offered gen/period Thu 2 Class style Lecture Language Japanese Course of the Course] The mechanism underlying mechanical and functional properties are the relationship between microscopic or aircraft structure etc., are introduced, with a detailed description of the relationship between microscopic orostitutent materials. The latest applications are introduced in the field of various transportation systems netuding airplanes. Course Coals The course goal is to understand basic concepts of composite materials and the underlying mechanism of heir mechanical properties from multiscale viewpoints, while the physical understanding of composites is leveloped based on multiple disciplines. Course of composite materials, 2times, The concept and definition of composite materials, their constituent materials and manufacturing methods are illustrated. Their application to aircraft structures etc. are also introduced. Mechanical properties of microscopic constituent materials, 2times, Resin for matrix and various fiber types re explained including their structure and mechanical properties. The wakest link model and Weibull histribution are described as a basis of the statistic nature of strength. Ba	Numbering c	ode												
Target year Number of credits 2 Course offered year/period 2019/Second semester Day/period Thu.2 Class style Lecture Language Jaganese Course of velocities Unpresent of the Course Lecture Language Jaganese Course of velocities The mechanism underlying mechanical and functional properties are lectured for advanced materials used and developed in advanced fields of current engineering. In particular, advanced composite materials used and accorecypto perties from the perspective of multiscale mechanics; also the insistropy of their properties, their fatigue and fracture properties are described in the basic discipline for strength of materials. The latest applications are introduced in the field of various transportation systems including airplanes. Concept of composite materials. Stimes, The concept and definition of composite materials, their constituent materials and manufacturing methods are illustrated. Their application to aircraft structures etc. are also innoduced. Mechanical properties of microscopic constituent materials. Ztimes, Resin for matrix and various fiber types are explained including their structure and mechanical properties. The veakest link model and Weibull stribution are described as a basis of the stratistic nature of strength. Bechanical properties of microscopic constituent materials. Stimes, Resin for matrix and various fiber types are explained including their structure and mechanical properties. The weakest link model and Weibull stribution are described as a basis of the stratist nature of strength.	Course title 先 <english> Str</english>	進材 Tength	料強度論 of Advar	nced N	Aaterials		Aff dep Job	iliated partment p title,Na	, me	Graduate Scho Professor,HO Graduate Scho Associate Profes	ool UJI ool sor,N	of Engineering YOU MASAKI of Engineering NISHIKAWA MASAAKI		
Day/period Thu.2 Class style Lecture Language Japanese Coutine and Purpose of the Coursel Image: Im	Target year				Number	of cred	its	2	Co yea	urse offered ar/period	2	2019/Second semester		
[Outline and Purpose of the Course] The mechanism underlying mechanical and functional properties are lectured for advanced materials used for aircraft structure etc., are introduced, with a detailed description of the relationship between microscopic properties from the perspective of multiscale mechanics; also the instortoy of their properties, their fatigue and fracture properties are described in the basic discipline for strength of materials. The latest applications are introduced in the field of various transportation systems neluding airplanes. Course Goals The ourse goal is to understand basic concepts of composite materials and the underlying mechanism of heir mechanical properties from multiscale viewpoints, while the phsyical understanding of composites is leveloped based on multiple disciplines. Course Schedule and Contents Concept of composite materials. 2times, The concept and definition of composite materials, their constituent materials and manufacturing methods are illustrated. Their application to aircraft structures etc. are also nroduced. Wechanical properties of microscopic constituent materials, 2times, Resin for matrix and various fiber types are explained including their structure and mechanical properties. The weakest link model and Weibull listribution are described as a basis of the statistic nature of strength. Basic mechanical properties, dimes, The specific strength, the specific strengths, and the rule of mixture for elastic modulus, independent elastic constants in the generalized Hookean law, the anisotropic failure criteria, and laminate theory. The relationship between the mechanical comperties of microscopic constituent materials also illustrated. Micromechanics, 2times, Tracture mechanical properties of micros	Day/period	Thu.2	2	Cla	ss style	Lecture	e			Language	Ja	apanese		
The mechanism underlying mechanical and functional properties are lectured for advanced materials used for aircraft structure etc., are introduced, with a detailed description of the relationship between microscopic constituent materials and macroscopic properties from the perspective of multiscale mechanics; also the anisotropy of their properties, their fatigue and fracture properties are described in the basic discipline for strength of materials. The latest applications are introduced in the field of various transportation systems neluding airplanes. DCURSE Coll The course goal is to understand basic concepts of composite materials and the underlying mechanism of heir mechanical properties from multiscale viewpoints, while the phsyical understanding of composites is leveloped based on multiple disciplines. DConcept of composite materials.2times, The concept and definition of composite materials, their constituent materials and manufacturing methods are illustrated. Their application to aircraft structures etc. are also nroduced. Wechanical properties of microscopic constituent materials, 2times, Resin for matrix and various fiber types are explained including their structure and mechanical properties. The weakest link model and Weibull listribution are described as a basis of the statistic nature of strength. Basic mechanical properties, dimes, The specific strength, the specific strength suffices suffices, and the rule of mixture for elastic modulus, independent elastic constants in the generalized Hookean law, the anisotropic failure criteria, and hamcroscopic properties of composite materials als also illustrated. The mechanical models are bescribed for short fiber relationship between the mechanical properties. The mechanical models are bescribed or short fiber relationship between the mechanical for perties are described. The micromechanics, 2times, Fracture mechanics of anisotropic materials are described. The micromechanics and interlaminar fatigue crack propagation, the critical issues in the	[Outline and	Outline and Purpose of the Course] The mechanism underlying mechanical and functional properties are lectured for advanced materials used and developed in advanced fields of current engineering. In particular, advanced composite materials, used for aircraft structure etc. are introduced, with a detailed description of the relationship between microscopic												
ICourse Goals] The course goal is to understand basic concepts of composite materials and the underlying mechanism of heir mechanical properties from multiscale viewpoints, while the phsyical understanding of composites is developed based on multiple disciplines. ICourse Schedule and Contents] Concept of composite materials,2times,The concept and definition of composite materials, their constituent naterials and manufacturing methods are illustrated. Their application to aircraft structures etc. are also ntroduced. Mechanical properties of microscopic constituent materials,2times,Resin for matrix and various fiber types are explained including their structure and mechanical properties. The weakest link model and Weibull listribution are described as a basis of the statistic nature of strength. Basic mechanical properties,4times,The specific strength, the specific stiffness, and the rule of mixture for elastic modulus and strength are lectured. In particular, the detailed explanation is made to the anisotropy of elastic modulus and strength are lectured. In particular, the detailed explanation is made to the anisotropy of elastic modulus, independent elastic constants in the generalized Hookean law, the anisotropic failure criteria, and manite theory. The relationship between the mechanical properties of microscopic constituent materials and macroscopic properties of composite anterials is also illustrated. The mechanical models are lescribed for short fiber reinforced composites and particle dispersed composites. The micromechanical analyses based on finite element method is also illustrated for the physical understanding of the strength of composite materials. The mechanics, 2times, Fracture mechanics of anisotropic materials are described. The nterlaminar fracture toughness and interlaminar fatigue crack prop	The mechanism underlying mechanical and functional properties are lectured for advanced materials used and developed in advanced fields of current engineering. In particular, advanced composite materials, used for aircraft structure etc., are introduced, with a detailed description of the relationship between microscopic constituent materials and macroscopic properties from the perspective of multiscale mechanics; also the anisotropy of their properties, their fatigue and fracture properties are described in the basic discipline for strength of materials. The latest applications are introduced in the field of various transportation systems including airplanes.													
The course goal is to understand basic concepts of composite materials and the underlying mechanism of heir mechanical properties from multiscale viewpoints, while the phsyical understanding of composites is developed based on multiple disciplines. [Course Schedule and Contents] Concept of composite materials,2times,The concept and definition of composite materials, their constituent materials and manufacturing methods are illustrated. Their application to aircraft structures etc. are also ntroduced. Mechanical properties of microscopic constituent materials,2times,Resin for matrix and various fiber types are explained including their structure and mechanical properties. The weakest link model and Weibull listribution are described as a basis of the statistic nature of strength. Basic mechanical properties,4times,The specific strength, the specific stiffness, and the rule of mixture for elastic modulus and strength are lectured. In particular, the detailed explanation is made to the anisotropy of elastic modulus, independent elastic constants in the generalized Hookean law, the anisotropic failure criteria, and manoroscopic properties of composite materials is also illustrated. Wicromechanics,2times,The mechanism of transverse fracture is illustrated. The mechanical models are described for short fiber reinforced composites and particle dispersed composites. The micromechanical analyses based on finite element method is also illustrated for the physical understanding of the strength of composite materials. Superconducting materials, ltime,High-temperature superconducting mechanism. Superconducting materials, ltime,High-temperature superconducting materials are described. The netlaminar fracture toughness and interlaminar fatigue crack propagation, the critical issues in the application of composite structures, are explained including their underlying mechanism. Superconducting materials, ltime,High-temperature superconducting materials are described. The netlaminar fracture toughness and interlam	[Course Goals]													
[Course Schedule and Contents] Concept of composite materials,2times,The concept and definition of composite materials, their constituent materials and manufacturing methods are illustrated. Their application to aircraft structures etc. are also ntroduced. Mechanical properties of microscopic constituent materials,2times,Resin for matrix and various fiber types are explained including their structure and mechanical properties. The weakest link model and Weibull distribution are described as a basis of the statistic nature of strength. Basic mechanical properties,4times,The specific strength, the specific stiffness, and the rule of mixture for elastic modulus and strength are lectured. In particular, the detailed explanation is made to the anisotropy of elastic modulus, independent elastic constants in the generalized Hookean law, the anisotropic failure criteria, and haminate theory. The relationship between the mechanical properties of microscopic constituent materials and macroscopic properties of composite materials is also illustrated. Micromechanics,2times,The mechanism of transverse fracture is illustrated. The mechanical models are described for short fiber reinforced composites and particle dispersed composites. The micromechanical analyses based on finite element method is also illustrated for the physical understanding of the strength of composite materials. Fracture mechanics properties,2times,Fracture mechanics of anisotropic materials are described. The interlaminar fracture toughness and interlaminar fatigue crack propagation, the critical issues in the application of composite structures, are explained including their underlying mechanism. Superconducting materials, ltime,High-temperature superconducting materials are the composite materials consisting of metal	[Course Goals] The course goal is to understand basic concepts of composite materials and the underlying mechanism of their mechanical properties from multiscale viewpoints, while the physical understanding of composites is developed based on multiple disciplines.													
Concept of composite materials,2times,The concept and definition of composite materials, their constituent naterials and manufacturing methods are illustrated. Their application to aircraft structures etc. are also ntroduced. Mechanical properties of microscopic constituent materials,2times,Resin for matrix and various fiber types are explained including their structure and mechanical properties. The weakest link model and Weibull distribution are described as a basis of the statistic nature of strength. Basic mechanical properties,4times,The specific strength, the specific stiffness, and the rule of mixture for elastic modulus and strength are lectured. In particular, the detailed explanation is made to the anisotropy of elastic modulus, independent elastic constants in the generalized Hookean law, the anisotropic failure criteria, and laminate theory. The relationship between the mechanical properties of microscopic constituent materials in and arcoscopic properties of composite materials is also illustrated. Micromechanics, 2times,The mechanism of transverse fracture is illustrated. The micromechanical models are described for short fiber reinforced composites and particle dispersed composites. The micromechanical analyses based on finite element method is also illustrated for the physical understanding of the strength of composite materials. Fracture mechanics of anisotropic materials are described. The niterlaminar fracture toughness and interlaminar fatigue crack propagation, the critical issues in the application of composite structures, are explained including their underlying mechanism are explained for understanding of metals and fibrous superconducting materials, ltime,The molding and machining process of composite materials is explained to relate it to their mechanical properties. Process and mechanical properties so much control their electric properties. Process and mechanical properties of composite materials, ltime,The molding and machining process of composite materials is explained to relate	[Course Schedule and Contents]													
	Concept of con materials and n introduced. Mechanical pro are explained in distribution are Basic mechanic elastic modulus and laminate th and macroscop Micromechanic described for sl analyses based composite mate Fracture mecha interlaminar fra application of c Superconductir consisting of m understanding to Process and me composite mate resin, intermed	The course goal is to understand basic concepts of composite materials and the underlying mechanism of their mechanical properties from multiscale viewpoints, while the phsyical understanding of composites is developed based on multiple disciplines. [Course Schedule and Contents] Concept of composite materials, 2times, The concept and definition of composite materials, their constituent materials and manufacturing methods are illustrated. Their application to aircraft structures etc. are also introduced. Mechanical properties of microscopic constituent materials, 2times, Resin for matrix and various fiber types are explained including their structure and mechanical properties. The weakest link model and Weibull distribution are described as a basis of the statistic nature of strength. Basic mechanical properties, 4times, The specific strength, the specific stiffness, and the rule of mixture for elastic modulus, independent elastic constants in the generalized Hookean law, the anisotropic failure criteria, and laminate theory. The relationship between the mechanical properties of microscopic constituent materials also illustrated. Micromechanics, 2times, The mechanism of transverse fracture is illustrated. The mechanical models are described for short fiber reinforced composites and particle dispersed composites. The micromechanical analyses based on finite element method is also illustrated for the physical understanding of the strength of composite materials. Itime, High-temperature superconducting materials are the composite materials consisting of metals and fibrous superconducting materials made of oxides. The mechanism. Superconducting materials properties of composite materials made of oxides. The mechanism are explained for understanding that their mechanical properties of composite materials materials are the composite materials consisting of metals and fibrous superconducting materials made of oxides. The mechanism. Superconducting materials properties so much control their electric properties. Proc												

先進材料強度論(2)

academic viewpoints.

Academic achievement test, 1time, Academic achievements is assessed.

[Class requirement]

Mechanics of Materials, Continuum Mechanics, Fundamentals of Materials, Solid Mechanics, Adv.

[Method, Point of view, and Attainment levels of Evaluation]

Grading is based on the reports. The assignments will be given around three times.

[Textbook]

Supplementary handouts will be distributed in the class.

[Reference books, etc.]

(Reference books)

D.Hull and T.W.Clyne, An Introduction to Composite Materials, Cambridge University Press.

[Regarding studies out of class (preparation and review)]

(Others (office hour, etc.))

The order and the item in the course are possibly subject to change.

Numbering	g code												
Course title <english></english>	精密計 Precisic	測加工学 m Measure	emen	t and Machi	ining	Aff dej Jol	iliated partment p title,Na	t, me	Gra Prot Gra Senio	duate Scho fessor,MAT duate Scho or Lecturer,BEA	ol of Engineering CSUBARA ATSUSHI ol of Engineering UCAMP, Anthony Tadeus Herve		
Target ye	ar			Number	of cred	lits	2	Co yea	ourse ar/pe	e offered eriod	2019/Second semester		
Day/perio	d Fri.2		Cla	iss style	Lecture	e				Language	Japanese and English		
[Outline a	nd Pur	pose of t	he C	ourse]									
This course metric fabric cutting tech	This course gives the principles of precision measurement and machining process for the meso-micro-nano metric fabrication. The optical measurement technologies (e.g. laser interferometer, optical encoders) and cutting technologies (e.g. cutting mechanics, tool, machine) are shown.												
[Course Goals]													
Understand the basic principles of precision mesurement and machining associated with the applications													
[Course Schedule and Contents]													
Basics of measurement and machining,1time,Concept of accuracy, precision, Relation of measurement, machining, and control Basics of precision measurement,2times, Optical mesurement,4times, ,3times, ,1time, ,2times, ,2times,													
[Class red	luireme	ent]											
None													
[Method, I	Point of	f view, ai	nd At	ttainment	levels	of E	Ivaluat	ion	ן				
Small exams	s in the t	erm and th	ne fin	al exam									
[Textbook	[]												
[Referenc	e book	s, etc.]											
(Referei	nce boo	oks)											
[Regardin	g studi	es out of	f clas	ss (prepar	ation a	nd	review)]					
(Others (office h	our, etc.))										
*Please visit	KULA	SIS to find	l out a	about office	e hours.								

													未更新
Numbering	g coc	le											
Course title <english></english>	バイ Bior	['] オメ necha	カニク. anics	ス			Aff der Joi	iliated partment b title,Na	i, I me	Insti Pro	tute for Fronti fessor,ADA	er Life and CHI TA	l Medical Science IJI
Target ye	ar				Number	of cred	lits	2	Co yea	urse ar/p	e offered eriod	2019/Se	econd semeste
Day/perio	d W	Ved.2		Cla	ss style	Lecture	e				Language	Japanes	e
[Outline a	nd P	'urpc	ose of t	he C	ourse]								
		_											
[Course Goals]													
[Course S	che	dule	and Co	nten	its]								
Introduction ,2times, ,4times, ,4times, ,4times,	,1tim	ie,											
[Class rec	luire	men	t]										
None													
[Method, I	Poin	t of v	view, ar	nd Af	tainment	levels	of E	valuat	ion]			
[Textbook	[]												
[Referenc	e bo	oks,	etc.]										
(Referer	ice l	book	ːs)										
[Regardin	g st	udies	s out of	clas	s (prepar	ation a	nd	review)]				
(Others (offic	e ho	ur, etc.))									
*Please visit	: KUJ	LASI	S to find	l out a	about office	hours.							

Numbering	j cod	le									
Course title <english> 協小電気機械システム創製学 Micro Electro Mechanical System Creation Micro Electro Mechanical System Creation Micro Electro Mechanical System Creation Affiliated department, Job title,Name Graduate School of Engineering Associate Professor,TSUCHIYA TOSHIYU Graduate School of Engineering Associate Professor,YOKOKAWA RYUU Course offered</english>											ol of Engineering ATA OSAMU ol of Engineering or,TSUCHIYA TOSHIYUKI ol of Engineering sor,YOKOKAWA RYUUJI
Target ye	ar			Number	of cred	lits	2	Co yea	ourse ar/pe	offered riod	2019/Second semester
Day/perio	d F	ri.4	Clas	ss style	Lecture	e				Language	English
[Outline a	nd P	Purpose of t	he Co	ourse]							
This is a joint lecture with Hong Kong University of Science and Technology (HKUST). A team consists of two students from each University work together to fullfill the assignment (design a microsystem) through paper survey, analysis, design, and presentation. A student can acquire not only the basic knowledge of a microsystem, but also comprehensive ability of English such as technical knowledge in English, skill for team work, and communication.											
[Course G	oals	s]									
[Course Goals] Acquire the knowledge and skill to design and analyze a microsystem.											
[Course S	che	dule and Co	onten	ts]							
• * Tutorial or	n mic	crosystem CA	D soft	- tware, 2tim	es	-		-			
Master CAD	prog	gram for micr	osyste	em design a	nd anal	ysis	which y	will	be ut	ilized to ac	complish an
assignment.		-	•	-		-					-
* Lecture an	d Ta	sk Introductio	on,2tin	nes							
Learn basic	know	vledge necess	ary to	design a m	icrosyst	em/	MEMS	(Mic	cro E	lectromech	aical Systems) utilizing
microfabrica	tion	technology.									
* Design and	ana	lysis work, 4	times		i a a tim a r						
of HKUST	desi	gn a microsys	stem c	by commun	icating	with	a team	mer	nder		
* Presentatio	n L '	2times									
The designe	d dev	vice and its an	alyze	d results is	presente	ed ir	h detail b	oy te	eam i	n English.	
* Evatuation	of d	levice, 3times						5		e	
Evaluate the	fabr	icated micros	ystem								
* Presentation	on II,	2times		_			_				
The measure	d res	sults and com	pariso	n between	the anal	yzeo	d results	s of t	the fa	abricated m	icrosystem is presented
by team in E	nglis	sn.									
[Class red	uire	mentl									
Students are	requ	ired to take th	ne 100	G203 course	e Micro	Pro	cess and	l Ma	ateria	l Engineer	ing provided in 1st term.
[Method]	Poin	t of view a	nd At	tainment	levels	of F	valuat	ion	1		
[Evaluation	n me	thod]				J . L	_ ruruut		.1		
Evaluation	n wil	1 be based on	prese	ntatins (60	points):	and	the end	of th	he te	rm assignm	nents (40 points).
	n stai	ndard	r-000		r •						» (pomo).
Presentati	ons a	are evaluated	with n	ot only des	ign, sim	nulat	tion and	mea	asure	ement resul	ts of device, but also

Continue to 微小電気機械システム創製学(2)

微小電気機械システム創製学**(2)**

collaboration among their team members.

[Textbook]

Instructed during class

[Reference books, etc.]

(**Reference books**) Introduced during class

[Regarding studies out of class (preparation and review)]

The class is a problem-solving class. Learning and work outside the lecture hours are indispensable.

(Others (office hour, etc.))

The student of this class is required to register to the course 10G205 Microsystem Engineering provided at Friday 4th so as to be able to take consecutive classes at Friday 4th and 5th. Those who want to take this course have to take training course for CAD in advance. Those students who want to take this course has to contact Prof. Tsuchiya (tutti@me.kyoto-u.ac.jp) by the end of 1st term.

Numbering	j code											
Course title <english></english>	有限要 Advanc	素法特論 ed Finite l	Eleme	ent Method		Aff dep Job	iliated partment p title,Na	, me	Graduate Scho Professor,NISI	ol of Engineering HWAKI SHINJI		
Target ye	ar			Number	of cred	its	2	Co yea	urse offered ar/period	2019/First semester		
Day/perio	d Wed	.2	Cla	ss style	Lecture	e			Language	English		
[Outline a	nd Pur	oose of t	he C	ourse]								
This course presents the basic concept and mathematical theory of the Finite Element Method (FEM), and explains how the FEM is applied in engineering problems. We also address important topics such as the physical meaning of geometrical non-linearity, material non-linearity, and non-linearity of boundary conditions, and we explore numerical methods to deal with these nonlinearities. Also, we guide students in class in the use of software to solve several numerical problems, to develop practical skill in applying the FEM to engineering problems.												
[Course Goals]												
[Course Goals] The course goals are for students to understand the mathematical theory of the FEM and the numerical methods for analyzing non-linear problems based on the FEM.												
[Course S	chedul	e and Co	onten	its]								
Basic knowldifferential e problems (st. Mathematica the solutions FEM formul numerical in conforming of Classificatio methods to do Numerical p Evaluation o	[Course Schedule and Contents] Basic knowledge of the FEM,3times,What is the FEM? The history of the FEM, classifications of partial differential equations, linear problems and non-linear problems, mathematical descriptions of structural problems (stress and strain, strong form and weak form, the principle of energy). Mathematical background of the FEM,2times,Variational calculus and the norm space, the convergence of the solutions. FEM formulations,3times,FEM approximations for linear problems, formulations of iso-parametric elements, numerical instability problems such as shear locking, formulations of reduced integration elements, non-conforming elements, the mixed approach, and assumed-stress elements. Classifications of nonlinearities and their formulations,4times,Classifications of nonlinearities and numerical methods to deal with these nonlinearities. Numerical practice,2times,Numerical practice using COMSOL. Evaluation of student achievements,1time,											
[Class req	uireme	nt]										
Solid Mecha	nics											
[Method, F	oint o	ⁱ view, a	nd At	tainment	levels	of E	valuat	ion]			
Grading is based the quality of two or three reports and the final exam.												

有限要素法特論**(2)**

[Textbook]

Not used

[Reference books, etc.]

(Reference books)

Bath, K.-J., Finite Element Procedures, Prentice Hall \Belytschko, T., Liu, W. K., and Moran, B., Nonlinear Finite Elements for Continua and Structures, Wiley

[Regarding studies out of class (preparation and review)]

N/A

(Others (office hour, etc.))

Numbering	ode					_						
Course title <english> Ir</english>	【工学 troduo	基礎 ction to Bi	iomed	lical Engine	ering	Aff dep Job	iliated partment p title,Na	, me	Graduate Scho Professor,TOM	ol of Engineering 1ITA NAOHIDE		
Target yea				Number	of cred	lits	2	Co yea	ourse offered ar/period	2019/Intensive, First semester		
Day/period	Inter	nsive	Cla	iss style	Lecture	e			Language	Japanese		
[Outline and	l Pur	pose of t	he C	ourse]								
Understand basic concepts related to clinical medicine and medical engineering . And expand the range of research by exchange each engineering knowledge and experience.												
[Course Goals]												
Expand the range of research through exchanges with other fields.												
[Course Schedule and Contents]												
Introduction to medicine for engineering students, 1 times, Introduction to Medical Engineeri, 1 times, Cross-field workshop, 1 3 times,												
[Class requ	ireme	ent]										
None												
[Method, Po	int of	f view, a	nd A	ttainment	levels	of E	valuat	ion]			
Participate to	he wo	rkshops s	ubmit	a report								
[Textbook]												
Not fixed												
[Reference	book	s, etc.]										
(Reference books) Introduced during class												
[Regarding	studi	es out o	f clas	ss (prepar	ation a	nd	review)]				
Summarize ea	ch ow:	n research	conte	ent.								
(Others (of	fice h	our, etc.))									
*Please visit k	ULA	SIS to find	l out a	about office	hours.							

Numbering	g code											
Course title <english></english>	量子分 Quantu	子物理学 m Theory	特論 of Mo	olecular Phy	ysics	Aff dep Job	iliated partment p title,Na	t, ime	Gra Ser	aduate Scho nior Lecture	ol of Engineering r,SENAMI MASATO	
Target ye	ar			Number	of cred	lits	2	Co yea	ours ar/p	e offered eriod	2019/Second semester	
Day/perio	d Mon	.2	Cla	iss style	Lecture	e				Language	Japanese	
[Outline a	nd Pur	pose of t	he C	ourse]								
Basics for the mechanics, the mechanics, the mechanics of	ne applic relativist	ation of q ic quantu	uantu m me	m theory to chanics, qua	molecu antum fi	lar p eld t	hysics heory, a	and and	rece path	ent progress i integral.	. Main topics: analytic	
[Course G	ioals]											
To understa	nd funda	mental ph	ysics	to apply qu	antum r	nech	nanics to	o ph	enoi	mena of ato	ms or molecules.	
[Course Schedule and Contents]												
1. Analytic 1 Hamiltonian 2. Classical form of elec 3. Relativist equation, Co theory and p 4. A primer Gauge trans molecules a 5. Electronic integral, Ah Confirmatio	 [Course Schedule and Contents] 1. Analytic mechanics and symmetry in physics,2times,Principle of least action, Equation of motion, Hamiltonian mechanics, Symmetry and conservation law in physics, Noether#039s theorem, Group theory 2. Classical relativistic theory,2times,Invariance of the speed of light, Lorentz transformation, Relativistic form of electromagnetism, Four component vector potential 3. Relativistic quantum mechanics,4-6times,Relativistic equation of motion, Nonrelativistic limit of Dirac equation, Covariance of Dirac equation, Plane wave solution for Dirac equation and negative energy, Hole theory and problem, Tani-Foldy-Wouthuysen transformation, Chrality 4. A primer of quantum field theory,2-4times,Field operator, Charge conjugation, Noether#039s theorem, Gauge transformation and gauge symmetry, Application of quantum field theory to theoretical study of molecules and condensed matter 5. Electronic Structure Computation,2times,Time evolution and propagator, Transition amplitude and path integral, Aharonov-Bohm effect, Path integral in quantum field theory 											
Quantum M	echanics	3 3										
[Method,	Point o	f view, a	nd A	ttainment	levels	of E	Valuat	tion]			
Evaluation v	will be b	ased on as	signn	nents (six ti	mes, 100) po	ints).		_			
[Textbook	k]											
Not used												
[Referenc	e book	s, etc.]										
(Refere J. D. Bjorke Advanced Q	n ce boo n, S. D. Juantum	oks) Drell, Rel Mechanic	ativis s∖ R.	tic Quantum P. Feynmar	n Mecha 1n, A. R	nics . Hił	VJ. J. S obs, Qu	aku: antu	rai, 1 ım M	Modern Qua Iechanics an	antum Mechanics, and nd Path Integrals	
[Regardin	g studi	es out o	f clas	ss (prepar	ation a	nd	review)]				
Review lect	ure notes	5.										
(Others (office h	our, etc.))									
If English su some supple	apport is mentary	required, documen	pleas ts are	e contact th provided ir	e instruc 1 Englisl	ctor h.	by emai	il. T	hen	words writt	en on a blackboard and	

														表更新	新
Numbering	g cod	de													
Course title <english></english>	物性 Soli	上物理 d Sta	重学 2 ute Physic	es 2			Aff der Jol	iliated partment b title,Na	t, I me	Gra Pro Gra Ass	duate Scho fessor,SUZ duate Scho ociate Profes	ol of UKI ol of ssor,l	ÈEngin MOT(Engin NAKAJ	eering OFUMI eering IMA KA	AORU
Target ye	ar				Number	of cred	its	2	Co yea	urse ar/po	e offered eriod	20	19/Firs	t semest	ter
Day/peric	d V	Ved.2	2	Cla	ss style	Lecture	e				Language	Jap	anese		
[Outline a	nd F	'urp	ose of t	he C	ourse]										
		-													
[Course Goals]															
[Course S	iche	dule	and Co	onter	its]										
[Course Schedule and Contents] ,4-5times, ,4-5times, ,4-5times, ,1time,															
[Class rec	quire	emer	nt]												
None							_								
[Method,	Poin	it of	view, a	nd Af	tainment	levels	of E	Evaluat	ion]					
[Textbook	(]														
[Referenc	e bc	oks	, etc.]												
(Refere	nce	bool	ks)												
[Regardin	ig st	udie	s out of	f clas	ss (prepara	ation a	nd	review)]						
(Others (offic	e hc	our, etc.))											
*Please visit	t KU	LAS	IS to find	l out a	about office	hours.									

Numbering	g co	de									
Course title <english></english>	現ſ Adva	七科学技術特 Inced Modern Scienc	論(8 e and T	3回コース) dechnology (8 tim) nes course)	Affiliated department Job title,Na	t, ime	Graduate S Senior Lect Graduate S Senior Lectur Graduate S Senior Lect Graduate S Senior Lect Graduate S Senior Lect	cho ure cho x,M cho ure cho ure cho ure	ol of Engineering r,ASHIDA RIYUUICHI ol of Engineering IATSUMOTO RIYOUSUKE ol of Engineering r,MAEDA MASAHIRO ol of Engineering r,YOROZU KAZUAKI ol of Engineering ,KANEKO KENTAROU	
Target ye	ar			Number	of cred	lits 1	Cοι yea	urse offere r/period	d	2019/Second semester	
Day/perio	iod Thu.5 Class style Lecture Language English and Purpose of the Course] English English English English										
[Outline a	nd I	Purpose of t	he C	ourse]				_			
environmen backgrounds done for fur	Engineering/Engineers have been expected to fulfill key roles among social issues and others, such as energy, environment and resource. This class introduces cutting edge science and technologies from their backgrounds, research and development, to problems for the practical applications. Group discussions will be done for further understanding of the topics of the course.										
The students students lear engineering	und n th to re	derstand of eac e importance f ealize sustainal	h tec or en ole de	hnology tov gineers to h evelopment.	vards so ave mu	cial issues t tidisciplina	to be ry mi	solved by e ind and unc	ngi ers	neers. In addition, the tand the significance of	
[Course S	che	edule and Co	nter	its]							
[Course Schedule and Contents]Topic I Computer-Aided Analyses for FluidWeek 1-2, Lagrangian Meshfree Methods as New Generation Computational ToolsWeek 3, CFD in Process Systems EngineeringWeek 4, CFD in Hydraulic EngineeringTopic II Utilization of Light EnergyWeek 5-6, Photochemistry of Organic MoleculesWeek 7, Solar Energy Conversion Using Semiconductor PhotocatalystsWeek 8, Efficiency Improvement in Solar Cells by Photonic Nano StructuresTopic III Materials AnalysisWeek 9-10,Crystal Structure Analysis by Power X-ray Diffraction Measurement											
Week 9-10,0 Week 11-12	Crys , Pri	tal Structure A inciples and Ap	nalys pplica	sis by Powe ations of Flu	r X-ray lorescen	Diffraction ce Spectros	Mea scopy	surement			

[Class requirement]

Each topic consists of four lectures.

This course requests to choose two topics from provided three topics in advance. It is prohibited to change the topics after registration.

[Method, Point of view, and Attainment levels of Evaluation]

The average score of the best two assignments for each topic is employed. For each topic which the students chose, they must attend minimum three lectures and submit minimum two assignments evaluated as "passed".

Continue to 現代科学技術特論(8回コース)(2)

現代科学技術特論(8回コース)(2)

[Textbook]

Course materials will be provided.

[Reference books, etc.]

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

(Related URLs)

http://www.glc.t.kyoto-u.ac.jp/grad(The home page of the engineering education research center)

[Regarding studies out of class (preparation and review)]

This course requests students to prepare a class in advance becouse some classes will be done by an interactive style as necessary.

(Others (office hour, etc.))

It is prohibited to change the registered course.

It is prohibited to attend the lectures of the other topic than the students chose.

All the students are requested to attend the guidance which will be held on the first class.

Numbering	g code									
Course title <english></english>	複雑系 Design	機械シス of Comple	Dデザイン cchanical Sy	stems	Affiliated departme Job title,N	nt, lame	Gra Pro Gra Pro Gra Pro Gra Asso Gra Pro	aduate Scho ofessor,SAW aduate Scho ofessor,TOM itute for Fronti ofessor,ADA aduate Scho ofessor,NISH aduate Scho ociate Professo aduate Scho ofessor,KOM	ol of Engineering /ARAGI TETSUO ol of Engineering IITA NAOHIDE er Life and Medical Sciences ACHI TAIJI ol of Engineering HWAKI SHINJI ol of Engineering or,TSUCHIYA TOSHIYUKI ol of Engineering IORI MASAHARU	
Target ye	ar			Number	of cred	its 2	Co ye	ours ar/p	e offered eriod	2019/Second semester
Day/perio	d Fri.3	3	Cla	ss style	Lecture	e			Language	Japanese
[Outline a	nd Pur	pose of t	he C	ourse]						
[Course G	oals]									
[Course S	chedu	le and Co	nten	its]						
,2times, ,2times, ,2times, ,2times, ,2times, ,2times,										
[Class req	uireme	ent]								
None										
[Method, F	Point o	of view, ar	nd At	tainment	levels	of Evalua	ation]		
[Textbook]									
[Reference	e book	s, etc.]								
(Referer	nce bo	oks)								
		·						Co	ntinue to 複雑系	機械システムのデザイン (2)

複雑系機械システムのデザイン**(2)**

[Regarding studies out of class (preparation and review)]

(Others (office hour, etc.))

Numbering	g coo	de									
Course title <english></english>	アー The	-ティファク ory for Desigr	トデt ning A	ブイン論 Artifacts		Affi dep Job	liated partment title,Na	, me	Gra Pro	duate Schoo fessor,SAW	ol of Engineering ARAGI TETSUO
Target year				Number of	lits	2	Cou yea	urs ir/p	e offered eriod	2019/Second semester	
Day/peric	d V	Wed.5	Cla	Class style Lecture Language English							
[Outline a	[Outline and Purpose of the Course]										
The activity	The activity of design is fundamentally similar across a wide variety of domains. I use artifact in a broad and										

atypical sense to describe any product of intentional creation, including physical goods, services, information systems, buildings, landscapes, organizations, and societies. The central theme of this lecture is that a unifying framework informs the human activity of design across all domains. Especially, understanding user needs is a key element of problem definition, and that understanding is usually best developed with interactive and immersive methods. In this lecture, a variety of methodologies for participatory systems approach and an idea of user-experience are provided, and its contributions to the design process are discussed.

[Course Goals]

This course is aimed at developing the ability to apply methods for identifying problems and interactively analyzing/evaluating systems, based on understanding of the principles of artifact design and on systematic thinking.

[Course Schedule and Contents]

Introduction, 1 time, We will shed light on the concept of artifacts as something to be put on equal footing with natural objects and examine the history of artifacts in terms of how they were viewed in different ages? namely, artifacts as modes of representation in the ancient world, artifacts as necessities for survival in the middle ages, artifacts as forms of convenience in modern times, and artifacts as a means of perpetuation in the current era.

Artifact function and purpose,3times,The effects that artifacts have on the outside world?i.e., other things?are ldquofunctions.rdquo Function is the concept of questioning the existence of an artifact, and design is the formulation of functions for achieving an intended purpose. We will discuss the categorization of artifacts in terms of how the ldquopurposerdquo of artifacts relates to the context in which they are used, and look at the origins of artifacts from the perspective of semiosis.

Artifact design principles,2times,To understand an artifact is to know how its internal structure acts on the outside world to realize its function. Today, cybernetics?which has explored the interaction between the physical world and the world of information?is expanding into a concept that encompasses society as well (second-order cybernetics), and concepts have been put forward for actively rethinking how human cognition and decision-making interact with the outside world (ecological approaches, socially distributed cognition, naturalistic decision-making). We will examine artifact design principles based on theories related human activity at the boundary of these externalities.

Artifact design representation and evaluation,3times,Design must fulfill its role of enhancing the quality of life through the creation of not only individual artifacts, but also environments and social systems that encompass groups of artifacts and natural objects. We will discuss the path toward expanding the scope of design from physical objects to environments and social systems that include intangible services, including with regard to problem development/representation methods, how to set purposes of design, how to eliminate the ambiguities and conflicts among various goals, searching for alternative design strategies, design

未更新

アーティファクトデザイン論**(2)**

evaluation, and principles and methods of consensus-forming among different stakeholders.

User-centered artifact design,2times,The quality of designs is something to be evaluated by the user, and hence there must be collaboration between users and designers/producers. Moreover, complex design challenges cannot be resolved by experts of only one discipline; they must be tackled by pooling the design-related knowledge of different domains. We will discuss the concept of user-centered design, design rationale, and international standards of design processes for achieving design that is grounded in the userrsquos needs/ perspective.

Participatory systems approach,2times,In order to deal with the design of large-scale, complex artifacts, one must take the approach of systemically structuring problems and basing design on diverse perspectives. We will broadly examine: interactive processes among system designers, users, and computers; methods of structurally modeling problems through repeated dialogue between experts in relative disciplines and computers; and ways of supporting the perceptions, interpretations, and decision-making of designers and users. We will also consider the utility of the participatory systems approach in smooth, effective implementation of system design.

Exercise in participatory systems approach,2times,Students will apply the participatory systems approach to a real-world artifact design challenge, and report the results of this exercise.

[Class requirement]

None

[Method, Point of view, and Attainment levels of Evaluation]

Students will be evaluated based on the following criteria, in the order listed. (1) Exercises assigned in class: approx. 20% (2) Final exam: approx. 60% (3) Contributions to classwork (e.g., asking good questions): approx. 20%

[Textbook]

Lecture notes used in class will be distributed as needed. Refer to ldquoTextbook (supplemental)rdquo below.

[Reference books, etc.]

(Reference books)

1. 吉川弘之 [2007] 人工物観, 横幹, 1(2), 59-65 2. Suh, N.P. [1990] The Principles of Design, Oxford University Press (邦訳:スー(翻訳:畑村洋太郎)「設計の原理? 創造的機械設計論」,朝倉書店, 1992.) 3. 吉川弘之 [1979] 一般設計学序説, 精密機械45 (8) 20?26, 1979. 4. Vladimir Hubka and W. Ernst Eder [1995] Design Science, Springer 5. Simon,H.[1996] The Sciences of the Artificial Third edition 秋 葉元吉、吉原英樹訳[1999]『システムの科学』パーソナルメディア 6. H・A・サイモン[1979] 稲葉元 吉・倉井武夫訳,『意思決定の科学』,産業能率大学出版部 7. Hutchins, Edwin [1995] Cognition in the Wild. MIT Press 8. Klein, G., Orasanu, J., Calderwood, R., and Zsambok, C.E. [1993] Decision Making in Action: Models and Methods. Ablex Publishing Co., Norwood, NJ. 9. D・ノーマン[1986] The Design of Everyday Things, 野島久雄訳『誰のためのデザイン?:認知科学者のデザイン原論』、新曜社 10. 椹 木、河村[1981]:参加型システムズ・アプローチ 手法と応用、日刊工業新聞社ほか

[Regarding studies out of class (preparation and review)]

Continue to アーティファクトデザイン論(3)

アーティファクトデザイン論**(3)**

(Others (office hour, etc.))

Office hours will be held for one hour before and after each class period (preferably 5th period on Tuesdays, but also 3rd period on Wednesdays). Appointments for other times can be requested by e-mail.

Numbering	g code	G-ENO	305 5°	G061 LJ71	G-EN	G06	5 5 G061	l LJ	71			
Course title <english></english>	応用数 Applied	理科学 l mathema	tical s	sciences		Aff dep Job	iliated partment p title,Na	t, i me	Gra Pro	aduate Schoo fessor,INO	ol of Engine UE YASUH	ering IIRO
Target ye	ar			Number	of cred	its	2	Co yea	ours ar/p	e offered eriod	2019/Seco	nd semester
Day/perio	d Mon	.3	Cla	ss style	Lecture	e				Language	Japanese	
[Outline a	nd Pur	pose of t	he C	ourse]								
数理科学は い複雑性の 理モデルの て学ぶ。	、様々 高い現 構築が	な分野に 象や不確 重要とな	おける 実性を る。 ^オ	5数理的な を伴う現象 4講義では	課題解 を理解 、この。	決に し子 よう	:応用さ ·測する ·な応用	s れ ⁻ ら上 ⁻ 月的7	てい では な	る。特に、 、数学的フ !点から、数	支配法則 マイデアに 対理科学の	が明確でな もとづく数 実践につい
[Course G	ioals]											
数理的な課 数理モデル 	題解決 /構築の! 	に必要と 技術に習 !	なる‡ 熟する 	キ通の考え る。 	方につい	いて	:学び、	微的	分方	程式およて	が確率・統計	計を用いた
[Course S	chedul	e and Co	onten	ts]								
概論(1))数理	ル モデルの)構築	に必要とな	こる考え	方	を学ぶ。	b				
微分方程 デルを紹介 ることがで	式によ し、少 きるこ	る数理モ 数の共通 とを学ぶ。	デル(した数 ,	(5)線形微 效理モデル	数分方積 [,] により、	武。	および ↓範な分	非線 〉野(限制	散分方程式 ける非常に	の観点から こ多様な現象	、数理モ 象を表現す
確率・統 考え方を紹 築の基礎を	計によ。 l介し、 学ぶ。	る数理モ 確率微分)	デル(方程ェ	(4)不確) 式による数	€性を伴 理モデ	¥う∃ ルの	現象を∃)構築や	理解 >種	する 々の	る上で重要 データに基	となる確率 基づく統計 [:]	^ェ ・統計の モデルの構
グループ をグループ 築に必要と	゚ワーク ゚ワーク ゚なる考:	(4)支配 により行・ え方の取行	法則 う。数 得を目	が明確でな ጷ理的な課 目指す。	\$い諸現 題解決 [∙]	見象 プロ	に対し ⁻ Iセスを	て、 E体	数理 験す	里モデルに ることによ	よる課題解 こり、数理 ⁻	⋮決の実践 モデルの構
学修到着	度の確	認(1) 学修	到達	度の確認を	E行う。							
[Class red	luireme	ent]										
微積分、確	率・統	計に関す	る基z	Þ的な知識								
[Method, I	Point of	f view, ar	nd At	tainment	levels	of E	valuat	tion]			
講義中に行	うグル	ープワー	クおよ	ドびレポー	ト試験	によ	:3,					
							· 		C	ontinue to	応用数理科	学(2)

応用数理科学(2)

[Textbook]

Not used

[Reference books, etc.]

(**Reference books**) Introduced during class

[Regarding studies out of class (preparation and review)]

講義資料による復習を充分行うこと。

(Others (office hour, etc.))

Numbering	g code							
Course title <english></english>	インタ Engine	マーンシッ ering Inter	プM(機械工学 nship M	群)	Affiliated department Job title,Na	, G me G Pi	raduate Scho rofessor,HAS raduate Scho rofessor,KUF	ol of Engineering SUO MASAHIRO ol of Engineering ROSE RYOUICHI
Target ye	ar 1st	year students c	or above Number	of cred	lits 2	Cour year/	se offered period	2019/Intensive, Second semester
Day/perio	d Inte	ensive	Class style	Practic	al training		Language	Japanese
[Outline a	nd Pur	pose of t	he Course]					
The aim of t designing ar On-site learn	he inter nd resea ning of	nship is ex rch of indu the importa	periencing on-sit astrial goods at a stance of teamwork	te activit factory of a and pro-	ties involved or a research oduction pro	l prod 1 labor 0cesses	uction, manu atory of Japa s in manufact	facturing, development, nese leading companies. uring is also the aim.
	calel							
The coal of	the inte	mahin ia ta	mastar a conora	Imathod	l of thinking	, and r	nathadalagu	at Machanical
Engineering motivate one	. Furthe eself to	ermore, by study and t	learning the relat	ionship career d	between a h levelopmen	uman t.	and machine	s at an industry,
[Course S	chedu	le and Co	ontents]					
As a general weeks. Thus company tou internship su Internship lo the educatio	rule, the a, the fo ar, a con ach as L ocation: nal affa	ne internshi llowing cas npany exp AESTE can Based on n irs office o	ip should meet the ses are not approval lanation meeting n be acceptable. recruitment from f the Engineering	e above ved as an and so c compan g Scienc	purpose. The purpose of the purpose. The purpose of	ne dura ; a sho erm m n find tsuri F	ation should b ort internship ore than two them at comp (youmu).	be not less than two such as a week, a weeks and an overseas pany's web sites and/or
[Class red	Juirem	ent]						
None								
[Method, I	Point c	of view, a	nd Attainment	levels	of Evaluat	ion]		
Credits (2) a activities.	re appr	oved based	l on the summary	report ((50%) and p	resent	ation (50%) a	bout the internship
[Textbook	[]							
Not used								
[Referenc	e book	ks, etc.]						
(Referei	nce bo	oks)						
[Regardin	g stud	ies out of	f class (prepar	ation a	nd review)]		

Consult with the internship host location.

(Others (office hour, etc.))

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

												未更新
Numbering	g coc	le										
Course title <english></english>	マイ Expe	נםל erim	Eンジニア ents on M	リング [!] licro I	特別実験及び Engineering	寅習第一 , Adv. I	Affi dep Job	liated artment title,Na	, me	Gra Pro	duate Scho fessor,MAT	ol of Engineering ISUBARA ATSUSHI
Target ye	ear				Number	of cred	lits	4	Co yea	urse ar/pe	e offered eriod	2019/Intensive, year-round
Day/perio	d I	nten	sive	Cla	ss style	Experin	ment	t			Language	Japanese
[Outline a	nd P	ʻurp	ose of t	he C	ourse]							
[Course G	Boals	\$]										
[Course S	Sche	dule	and Co	onten	ts]							
, 1 times, ,9times, ,10times, ,10times,												
[Class rec	quire	mei	nt]									
None												
[Method,	Poin	t of	view, a	nd At	tainment	levels	of E	valuat	ion]		
[Textbook	(]											
[Referenc	e bo	oks	s, etc.]									
(Refere	nce l	000	ks)									
[Regardin	g st	udie	es out of	f clas	s (prepara	ation a	nd r	eview)]			
(Others (offic	e ho	our, etc.))								
*Please visi	t KU	LAS	SIS to find	l out a	about office	hours.						

	未更新												
Numbering	g coc	le											
Course title <english></english>	マイ Expe	クロエ erimer	ンジニア! nts on M	Jング icro E	特別実験及び Engineering,	寅習第二 Adv. II	Affil depa Job	iated artment title,Na	, me	Gra Prof	duate Scho fessor,MAT	ol of Engineering ISUBARA ATSUSHI	
Target ye	ar				Number	of cred	lits	4	Co yea	urse ar/pe	e offered eriod	2019/Intensive, year-round	
Day/perio	d I	ntens	ive	Cla	ss style	Experii	ment				Language	Japanese	
[Outline a	nd P	urpo	ose of t	he C	ourse]								
[Course G	boals	\$]											
[Course S	che	dule	and Co	nten	its]								
,9times, ,10times, ,10times, ,1time,													
[Class rec	quire	men	t]										
None													
[Method, I	Poin	t of v	∕iew, ar	nd At	tainment	levels	of Ev	valuat	ion]]			
[Textbook	k]												
[Referenc	e bo	oks,	etc.]										
(Referei	nce l	book	(S)										
[Regardin	g st	udies	s out of	clas	s (prepara	ation a	nd r	eview)]				
(Others (offic	e ho	ur, etc.))									
*Please visit	t KU	LASI	S to find	out a	about office	hours.							

Numbering c	ode													
Course title 禎 <english> Ba</english>	誻雓系 sic Sem	幾械工学 inar of Com	基礎1 plex M	zミナー 1 echanical Engi	neering,1	Affiliated department, Job title,Name			Graduate School of Engineering Professor,HIRAKATA HIROYUKI Graduate School of Engineering Senior Lecturer,SUGIMOTO HIROS Graduate School of Engineering Senior Lecturer,AOI SHINYA Graduate School of Engineering Professor,KOMORI MASAHARU					
Target year				Number	of cred	lits	1	Cour year	rse offered /period	2019/First semester				
Day/period	Tue.1		Cla	ss style	Semina	ar			Language	English				
[Outline and	Purp	oose of t	f the Course]											
This seminar p ideas and infor attendees a cha multidisciplina young scientist	is seminar provides master-course students an opportunity of face-to-face group discussions to exchange eas and information with those from other research fields. It is also emphasized in this seminar to give the endees a chance to boost up the presentation skills necessary to broaden their own expertise across ultidisciplinary research fields. The primal aim is to offer these significant experiences of leadership as a ung scientist with broad perspective in the global community.													
[Course Goa	als]													
Students will b	e able	to acquir	e pres	entation and	d logica	1 thi	nking sl	cills.						
[Course Sch	edule	e and Co	onten	ts]										
Organizing gro Group activity, the group. Wee Final presentat	oups,11 ,10-12 ekly re ion,1-2	time, times,Eac ports on t 2times,Ea	h gro he act ch gro	up chooses ivity are recoup gives pr	an activ quired. resentati	rity t ion c	heme, a of its fin	nd pu al res	rsue the goal utls.	through discussion in				
[Class requi None	reme	nt]												
[Method, Po	int of	view, ar	nd At	tainment	levels	of E	valuat	ion]						
Based on Grou	p Acti	vity Repo	orts an	d Personal	Report									
[Textbook]														
Not used														
[Reference l	books	s, etc.]												
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[Regarding	studio	es out of	f clas	s (prepara	ation a	nd ı	review)]						
Group activitie	s													
(Others (off	ice h	our, etc.))											
All activities sl Registration is cme-seminar@	nould requir me.ky	be done in red by the roto-u.ac.j	n Engl deadl ip	lish. ine. Contac	et at									
*Please visit K	ULAS	ASIS to find out about office hours.												

Numbering c	ode											
Course title 複 <english> Ba</english>	雑系機 sic Semina	系機械工学基礎セミナー2 Seminar of Complex Mechanical Engineering,2 Number of credits 1 Seminar of Complex Mechanical Engineering,2 Number of credits 1 Graduate School of Engineering Associate Professor,NAKAJIMA K Graduate School of Engineering Associate Professor,KOUNO DAI Graduate School of Engineering Professor,KOMORI MASAHAR										
Target year				Number	of cred	lits	1	Cou yea	urse ir/pe	offered eriod	2019/Second semester	
Day/period	Thu.1		Cla	ss style	Semina	ar				Language	English	
[Outline and	Purpo	ose of th	of the Course]									
This seminar p ideas and infor attendees a cha multidisciplina young scientist	is seminar provides master-course students an opportunity of face-to-face group discussions to exchange eas and information with those from other research fields. It is also emphasized in this seminar to give the endees a chance to boost up the presentation skills necessary to broaden their own expertise across ultidisciplinary research fields. The primal aim is to offer these significant experiences of leadership as a ung scientist with broad perspective in the global community.											
[Course Goa	ıls]											
Students will b	e able to	o acquire	pres	entation and	d logica	l thi	nking sl	cills.				
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[Class requi None	rement	t]										
[Method, Po	int of v	view, an	d At	tainment	levels	of E	valuat	ion]				
Based on Grou	p Activi	ity Repor	rts an	d Personal	Report							
[Textbook]												
Not used												
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*Please visit K	ULASIS	LASIS to find out about office hours.										

Numberi	ng c	ode	G-LAS00 80001 LJ20														
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Group	Cor	nmon	Gradua	ate Cou	rses		Field	l(Cla	ssific	catio	n)	Soc	cial	Responsibi	ility a	and Pr	ofitability
Languag	e	Japane	ese				Old	gro	up					Number o	of cre	dits	0.5
Hours		7.5		Class	style	Leo	cture					0	Coı yea	ırse offered r/period	2 I se	2019 • ntensi emeste	ve, First er
Day/perio	d	Intensi	ve		Tar	get	year	Grad	luate	stuc	lents	E	Elig	ible student	ts F	or scie	ence student
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[Course	Go	als]															
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[Course	Scł	nedule	e and	Conte	nts)]												
第1234567第1234567第1211	科者の室タ上は研研成発研タ也不切印材資 学の可ののの研究究果表究のの正な的産金	研責能安収間究に成ののに取逸事発財のと一究任性全集違活お果共方お扱脱件表産考契=にはなる。	こあと村とい助けを有去けいう(うとえり」おる対策管と中る発 とる(為シ法研方 」け行応と理手の不表 プ不デ(ェ(究(る動 環・抜間正す ロ正-好-オ費知 心と 境実き違行る セ行タまン-の的 - 構は へ験行い為際 ス為のし捏サ適財	え(のデ為と の (保く造一正産 -?学 配一のの 研 典存な事シ使の -研術 慮夕戒区 究 型・い件ッ用確 -	究活 のめ別倫 的公研)プ保	者動 正 理 な開究 と このに し 公 不・行 二 研 こうぼう すい こうしん アイ・ディング しょう こうしょう しょう しょう しょう しょう しょう しょう しょう しょう しょう	「「「「」」」 「「」」 「」 「」 「」」 「」」 「」」 「」」 「」」	あす 扱) 稿 表 - う る い う i i i i i i i i i i i i i i i i i i	行者 方 –			義 Con	務) tinue to 研究倫理	里 . 研		理T系)(7)
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研究倫理・研究公正(理工系)(2)

- 3.利益相反(利害の衝突と回避)
- 4.公的研究費の適切な取扱い
- 5.研究者・研究機関へのペナルティー
- 6.事例紹介(ビデオ:分野共通4件)
- 7 . 結語

第4講 グループワーク

- 1.例示された課題についてグループ・ディスカッションと発表
- 2.日本学術振興会「研究倫理ラーニングコース」の受講と修了証書の提出

[Class requirement]

None

[Method, Point of view, and Attainment levels of Evaluation]

第1~4講の全てに出席と参加の状況、ならびに学術振興会e-learningの修了証の提出をもって合格 を判定する。

[Textbook]

日本学術振興会「科学の健全な発展のために」編集委員会 『科学の健全な発展のために - 誠実な 科学者の心得 - 』(丸善出版)ISBN:978-4621089149(学術振興会のHP(https://www.jsps.go.jp/jkousei/data/rinri.pdf)より、テキスト版をダウンロード可能)

[Reference book, etc.]

(Reference book)

米国科学アカデミー 編、池内 了 訳 『科学者をめざす君たちへ 研究者の責任ある行動とは』(化 学同人)ISBN:978-4759814286

眞嶋俊造、奥田太郎、河野哲也編著 『人文・社会科学のための研究倫理ガイドブック』(慶応義塾 大学出版会)ISBN:978-4766422559

神里彩子、武藤香織編 『医学・生命科学の研究倫理ハンドブック』(東京大学出版会)ISBN:978-4130624138

野島高彦著 『誰も教えてくれなかった実験ノートの書き方』(化学同人)ISBN:978-4759819335 須田桃子著 『捏造の科学者 STAP細胞事件』(文藝春秋)ISBN:978-4163901916

[Regarding studies out of class (preparation and review)]

日本学術振興会「研究倫理ラーニングコース」の受講

[Others (office hour, etc.)]

第1~3講は土曜2,3,4限に行う。第4講はグループワークを中心として講義の翌週または翌 々週の土曜1,2または3,4限に実施する。

Numbering	bering code G-LAS00 80004 LJ44																
Course title 失 <english> Ii</english>	回的財產 ntellectua	al Pro	perty				Affil dep Job	iated artment, title,Nan	ne	Offic End Offic Pro	e of So owed 1 e of So ject Pr	ciety-A Resear ciety-A rofess	.cadem ch Pr .cadem .cadem	iia Colla ofesso iia Colla AWA	abora or,Kľ abora .BA	tion for 1 TANI 7 tion for 1 TA TA	Innovation TETSUO Innovation DASHI
Group Con	mmon G	radua	te Course	es		Field(Cla	ssifi	cation)	So	ocial	Resp	oonsi	bilit	y and	l Pr	ofitab	ility
Language	Japanese	e				Old gro	up				Nur	nber	of c	redit	s	0.5	
Hours	7.5		Class st	yle]	Lect	ture				Cou yea	rse c r/peri	offere od	ed	2019 • Intensive, First semester			rst
Day/period	Intensive	e		Targ	get y	vear Gra	duate	e student	s	Eligi	ble s	tude	nts	For	For all majors		
[Outline and	d Purpo	se o	f the Co	ourse]												
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知財戦略の 企業、ベン 権利取得や)基本的 /チャー の知財契	な考; や大 約の利	え方 学におけ 種類と考	る知	財活	f用(取	り組	み事例)								
- 先行技術情 の習得を目的	青報検索 りとする。	手法l 。	について	の基	礎的	りな知識											
[Course Sc	hedule	and	Content	:s)]													
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上記 から	につい	τ、 <u>:</u>	全4回で	授業	する	D _o											
そのほか、必	必要に応	じて、	、以下を	行う。	•					Co	ntin	ue to	_	的財	產(- 2) -	

知的財産**(2)**

・専門家(弁護士、企業知財担当者など)を招へいし、特許戦略や特許訴訟など企業の具体的取組 事例を紹介

・京都大学における産学連携の取組、知財活動を紹介。

[Class requirement]

None

[Method, Point of view, and Attainment levels of Evaluation]

レポート:60%

平常点評価(出席状況):40%

[Textbook]

Not fixed

[Reference book, etc.]

(**Reference book**) Introduced during class

[Regarding studies out of class (preparation and review)]

特になし

[Others (office hour, etc.)]

授業中に紹介する