Ak	ash	i College			anical a m Eng		lectror ing	nic	Year 2024			4			
De	par	tment Goals									•				
Col	ırc					Class	Hours p	er Wee	k						Divisio
Co e Ca	ui S	Course Title	Cours e	Credit	Credit	Adv.	1st Y			Adv.	2nd Y			Instru	n in
Cat	eg	Course Title	Code	Type	S	1st	T _a	2nd	1.0	1st	100	2nd	1.5	ctor	Learni ng
						1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q		
Ge ne ral	Co m pu lso ry	Ethics for Engineers	6001	Acade mic Credit	2			2							
Ge ne ral	Co m pu lso ry	Global Studies	6002	Acade mic Credit	2	2								ARAK AWA Hirono ri	
Ge ne ral	El ec tiv e	Geophysics	6003	Acade mic Credit	2			2						YOKO YAMA Masah iko	
Ge ne ral	El ec tiv e	Introduction to Nano Materials Design	6004	Acade mic Credit	2	2								NAKA NISHI Hirosh i	
Ge ne ral	El ec tiv e	Culture and Communication	6005	Acade mic Credit	2	2								INOUE Hideto shi	
Ge ne ral	El ec tiv e	Overseas Training	6006	School Credit	2	2		2							
Sp eci ali ze d	Co m pu lso ry	Creative Faculty Development	6007	School Credit	2			4						NAKA NISHI Hirosh i	
Sp eci ali	Co m pu	Engineering Topics for Advanced Course Students	6008	Acade mic Credit	2			2						WATA NABE Moriyo shi,HI RAISH I Toshih iro,NA KANIS HI Hirosh i,NOM URA Hayat o,	
Sp eci ali ze d	Co m pu lso ry	Engineering Presentation I	6009	School Credit	1	2								SUYA MA Taikei, TAKED A Naho	
Sp eci ali ze d	Co m pu lso ry	Industrial Materials	6010	Acade mic Credit	2	2								MORIS HITA Tomo hiro, ,TAKE DA Naho, HIRAI SHI Toshih iro	
Sp eci ali ze d	El ec tiv e	Information Processing	6011	Acade mic Credit	2	2								INOUE Kazun ari,SU YAMA Taikei	
Sp eci ali ze d	El ec tiv e	Analytical Mechanics	6012	Acade mic Credit	2	2								NAKA NISHI Hirosh i	

Sp eci ali ze d	El ec tiv e	Inclusive Design	6013	Acade mic Credit	2	2	OTSU KA Takehi ko,IW ATA Naoki, OKAM URA Hideki
Sp eci ali ze d	Co m pu lso ry	Off-Campus Practical Training	6014	School Credit	2	2 2	,
Sp eci ali ze d	Co m pu lso ry	Preliminary Research Studies	6015	School Credit	4	4 4	
Sp eci ali ze d	El ec	System Control Engineering	6016	Acade mic Credit	2	2	KAMI Yasus hi
Sp eci ali ze d	El ec tiv e	Advanced Instrumentation Engineering	6017	Acade mic Credit	2	2	SHI Fengh ui
Sp eci ali ze d	El ec tiv e	Random Signal Analysis	6018	Acade mic Credit	2		INOUE Kazun ari
Sp eci ali ze d	El ec tiv e	Advanced Electromagnetics	6019	Acade mic Credit	2		
Sp eci ali ze d	El ec tiv e	Advanced Strength of Materials	6020	Acade mic Credit	2		MORIS HITA Tomo hiro
Sp eci ali ze d	El ec tiv e	Production Systems	6021	Acade mic Credit	2	2	OHMO RI Shiget oshi
Sp eci ali ze d	El ec tiv e	Energy Technology I	6022	Acade mic Credit	2		
Sp eci ali ze d	El ec tiv e	Tribology	6023	Acade mic Credit	2		KATO H Takahi ro
Sp eci ali ze d	El ec tiv e	Advanced Electrical Circuits	6024	Acade mic Credit	2		HOSO KAWA Atsuis hi
Sp eci ali ze d	El ec tiv e	Advanced Heat Transfer	6025	Acade mic Credit	2		KUNI MINE Kanji
Ge ne ral	El ec tiv e	Environmental Science	6026	Acade mic Credit	2		WATA NABE Moriyo shi,HI RAISH I Toshih iro
Sp eci ali ze d	Co m pu lso ry	Engineering Presentation II	6027	School Credit	1		HIRAI SHI Toshih iro,KU NIMIN E Kanji

Sp eci ali ze d	Co m pu lso ry	Research Studies	6028	School Credit	8	8 8		
Sp eci ali ze d	El ec tiv e	Mechatro-system	6029	Acade mic Credit	2		SEKIM ORI Daisuk e	
Sp eci ali ze d	El ec tiv e	Computational Mechanics	6030	Acade mic Credit	2	2	KUNI MINE Kanji	
Sp eci ali ze d	El ec tiv e	Energy Technology II	6031	Acade mic Credit	2		TANA KA Seiichi	
Sp eci ali ze d	El ec tiv e	Strength and Fracture of Materials	6032	Acade mic Credit	2		MORIS HITA Tomo hiro	
Sp eci ali ze d	El ec tiv e	Optoelectronics Devices	6033	Acade mic Credit	2		SUYA MA Taikei	
Sp eci ali ze d	El ec tiv e	Algorithms	6034	Acade mic Credit	2		HAMA DA Yukihir o	
Sp eci ali ze d	El ec tiv e	Advanced Electronic Circuit	6035	Acade mic Credit	2		TERAS AWA Shinic hi	
Sp eci ali ze d	El ec tiv e	Mathematical Informatics	6036	Acade mic Credit	2		HAMA DA Yukihir o	
Sp eci ali ze d	El ec tiv e	Optimization Design	6037	Acade mic Credit	2		SHI Fengh ui	
Sp eci ali ze d	El ec tiv e	Micromachine	6038	Acade mic Credit	2		MATS UZUK A Naoki	

Д	ıkashi Co	ollege	Year	2024			ourse Title	Ethics for Engineers	
Course	Informa	tion	·	-		•			
Course Co		6001			Course Categor	ry	General /	Compulsory	
Class For	mat	Lecture			Credits		Academic	Credit: 2	
Departme	ent		cal and Electronic	System	Student Grade		Adv. 1st		
Term		Engineer Second 9	Semester		Classes per We	oek	2		
Textbook	and/or				· · · · · · · · · · · · · · · · · · ·				
Teaching Instructor	Matérials		ト編: 1はしめての	工学倫理」、昭和堂	and Printed ma	iteriais			
	Objectiv	 es							
(1) Under (2) Under (3) Have (4) Devel understar	rstand the rstand wha sufficient l op the abi nding and	characteris at ethical iss knowledge lity to devis knowledge	sues engineers mof the important se effective solution of (1) to (3).	nay face in their da social systems rela	y-to-day work. Ited to engineers cal issues that e	s when ngineer	dealing w s will enco	ineers have in response to them. ith the above-mentioned issues. ounter, based on the	
Rubric		304.57		a to state, and pro-					
			Ideal Level		Standard Level			Unacceptable Level	
Achievem	ent 1		Fully understa	s of an engineer's ethical	Understand the of an engineer's ethical respons	e charac s job ar	nd their	Do not fully understand the characteristics of an engineer's job and their ethical responsibilities.	
Achievem	ent 2		Fully understa	nd what ethical ers may face.	Understand wh engineers may		cal issues	Do not understand what ethical issues engineers may face.	
Achievement 3				t knowledge of social systems ineers.	Have knowledg important socia to engineers.			Do not have knowledge of the important social systems related to engineers.	
			Fully have the effective solut issues that en encounter.	ability to devise ions for ethical gineers will	Have the ability to devise effective solutions for ethical issues that engineers will encounter.			Do not have the ability to devise effective solutions for ethical issues that engineers will encounter.	
Assigne	d Depar	tment Ob	ojectives						
Teachin	g Metho	d							
Outline		technolo their exp course w achievin	gy is used by hig pertise. This responding will examine the s g it, and how to	hly trained engine onsibility is now be pecific details of the deal with that.	ers who have a in ecoming more im is responsibility	respons portan that en	sibility to s t, and soc igineers be	chnology. This science and ociety to use it properly based on ial interest is growing, too. This ear, what problems may arise in	
Style		of the cla	ass content, their	vill be held in a lecture style. At the end of each class, students should write and submit a summary ss content, their opinions, etc. and this will be evaluated as a small report. In for this course is Omota.					
Notice		guarante assignme accident the class	rse's content will amount to 90 hours of study in total. These hours red in classes and the standard self-study time required for pre-study ent reports. The class will use videos, newspaper articles. etc., and it is and corporate morals. Reference materials and other materials are . Therefore, we would like students to show interest in areas other who miss 1/3 or more of classes will not be eligible for a passing gi				y / review, and completing ake many examples from recent introduced as appropriate during than their specialty field.		
Charact	eristics		Division in Le				<u>, </u>		
	Learning	,	☐ Aided by I		☑ Applicable to	o Remo	te Class	☐ Instructor Professionally Experienced	
Course	Dlan								
Course	1011		Theme			Goals			
		1st	Why engineering Why is it necessa engineers to lear between engineer social backgroun by the engineerii	ethics? ary for those who a rn ethics? Clarify the ers and ethics throud, the codes of eth ng academic societ n their significance	aspire to be ne links ugh today's ethics based on today's social backgroun code of ethics.				
2nd	3rd	2nd	Deal with the spathe most famous	e Challenger accide ace shuttle Challen s case in engineerin sions made by the e organization.	ger accident, and	of the	Understand the characteristics and relation of the decisions made by the engineers an executives.		
2nd Semeste r	Quarter	3rd	Following the pre Challenger accidences responsibilities e	e Challenger disast evious class, use thent as a guide and ngineers have for management fund	ne case of the consider what making	Understand the responsibilities and abiliti required of engineers for organization rismanagement.			
	۷	401	Use the JCO criti consider the sigr that have support industry, the characteristics are the characteristics.	CO criticality accid cality accident as a difference of improvented the Japanese allenges facing ther lengage with then	an example to ement activities manufacturing n, and how		stand the s rement act	significance and challenges of tivities.	

	5th		The Tokaimura JCO cr Following the previous criticality accident to d which collective organ how technicians should safety and quality.	class, use the JCO		tics of group thinking and o deal with it and secure		
	6th		Whistleblowing 1 Discuss the purpose of whistleblower protection	f the recently introduced on system, criticisms of the relationship between this	Acquire knowledge of protection system, ar	the whistleblower and understand its issues.		
	7th		part of their efforts to	reasing number of lished help desks, etc. as enhance their compliance trend's significance in the	Understand what nee ensure proper organiz	ds to be kept in mind to zational behavior.		
	8th		Product Liability Act Review the details of t Act—which is said to b engineers—and discus engineers to establish belief.	wledge of the Product me able to use it as a				
	9th		Intellectual properties Confirm the significance of the patent, copyright, and other systems for technology development, and examine the issues, etc., facing them that accompany information technology development, etc. Acquire knowledge of intellectual proper and understand their significance in manufacturing.					
	10th		Bhopal, India—the big history—as an examplincreasing problems as	nemicals factory accident in gest industrial accident in e to discuss the further asociated with overseas globalization progresses.	Acquire knowledge of industrial activities.	Acquire knowledge of the issues faced in overseas industrial activities.		
	11th		that there is a need fo account that technolog related to the interacti	class, examine the fact r engineers to take into gy development is deeply on between ire, history, and thoughts,		g of the previous class and ds for overseas industrial		
4th Quarter	12th			es of the Door Project,				
	13th		Based on the previous engineers also have the engineers, and that it		Understand that in order to understand and use technology effectively, it is necessary to properly understand and communicate technology ideas.			
	14th		technology developme power struggles and d	political aspect to new int that gives birth to new iscrimination, whereas attempt to democratize it.	Understand the conce the systems necessar	ept of universal design and y for achieving it.		
	15th		had a variety of impaction information society an	opments by engineers have ts in sectors such as d medical care. lation that engineers shoul	and modern society a	onship between engineers nd what their place in it		
	16th		No final exam					
Evaluation Met	hod ar	nd V	Veight (%)	,				
		Fina	l Report	Short Reports & Presentation	CBT of ethics for researcher	Total		
Subtotal		60		30	10	100		
Basic Proficiency		60		30	10	100		
Specialized Proficie		0		0	0	0		
Cross Area Proficie	ncy	0		0	0	0		

Akashi Coll	eae	Year	2024		Course	Global Studies	
		rear	2021		Title	Global Studies	
Course Information	6002			Course Category	General	/ Compulsory	
Class Format	Lecture			Credits		c Credit: 2	
Department		and Electronic	System	Student Grade	Adv. 1st		
Term	First Semest			Classes per Week	2		
Textbook and/or Teaching Materials	Hideki Tarur	moto, Underst	anding Internation	al Sociology, 2nd	ed.		
Instructor	ARAKAWA H	lironori					
Course Objectives	5						
(1) Possess internatio (2) Understand the cu (3) Understand and co (4) Understand and e (5) Understand the fu (6) Be able to delve d fieldwork, and prepara (7) Be able to engage	irrent interna onsider the fo xplain the co ndamentals eeply into iss e presentatio	ational situation uture of the 2 ncepts of race of cross-borde sues of interes ans and papers	on that is in flux. 1st century and the e and nation. er societies. st through the stud s based on the resi	e new internationally of the internation	·	arry out research, including	
Rubric							
	E	xcellent		Good		Insufficient	
Achievement 1		Possess the influalities of a g	ternational lobal engineer.	Almost have the in qualities of a glob		Inability to possess the international qualities of a global engineer.	
Achievement 2	ii	Inderstand the nternational s lux.	e current ituation that is in	Understand the cuinternational situal a state of flux.	urrent Ition that is in	Inability to understand the current international situation that is in flux.	
Achievement 3	2	21st century a	d consider the nd the future of ational society.	Able to consider was required to undersconsider the 21st the future of the rinternational socies.	stand and century and new	Cannot understand and reflect on the 21st century and the future of the new international society.	
Achievement 4	c	Inderstand an concepts of ether at ion.	d fully explain the nnicity and	Almost understanthe concepts of et nation.	d and explain hnicity and	Cannot understand and explain the concepts of ethnicity and nation.	
Achievement 5		Inderstand the	e fundamentals of societies.	Almost understan- fundamentals of t societies.		Cannot understand the fundamentals of transnational societies.	
Achievement 6	ii t ii ii	Through students' own study of international relations, be able to delve deeply into issues of interest, conduct research, including fieldwork, and prepare presentations and papers based on the results of that research.		Almost can carry including fieldwork write a presentation thesis based on the research.	k, and can on and a	Cannot carry out research, including fieldwork, and prepare a presentation or thesis based on the results of that research.	
Achievement 7		Be able to disc ssues.	uss various global	Almost can discus global issues.	s and debate	Cannot discuss global issues.	
Assigned Departn	nent Objec	ctives					
Teaching Method							
Outline	the basic co internationa to acquire the	ncepts of soci I society and i ne knowledge	al science and inte independently rese of global issues ne	rnational sociology arch, present, and	, students wi discuss the ters and resea	society, and after understanding Il select a topic related to opic. The objective is for students archers, and to actively cultivate approach society.	
Style	issues that a theme based conduct reso the results of their own re	arise from tim d on the textb earch, includir of their resear esearch as wel	e to time. After the look or reference b ng fieldwork and su ch and ultimately v	e lecture on interna ook in which he/sh urveys (even online write a thesis. In th	ational social ne is intereste e) if possible. ne presentatio	presentations on various global issues, each student will choose a ed, delve deeply into it, and Students are required to present on, students will be evaluated on discourse, so preparation for	
Notice	The total an guaranteed presentatior social condit presenter is they ask in r textbook for Lectures wil Students wh	nount of study in class, preparametric and the assicions. Student required to presponse to the each present is a given in Each of miss 1/3 or	vime for this cour aration, and review gned paper. "Globa s are expected to a repare a resume fo e presentation. Th ation. Proactive pa English, with Japan more of classes w	v, and the standard al Studies" is a disc approach class with or his/her topic, an	d self-study ti sipline that is a daily inter d the audiend sure to read stial.	nich is the sum of the study time me required to prepare the constantly changing according to est in current affairs. Each the will be graded on the questions the relevant sections of the	
Characteristics of	Class / Di	vision in Le	arning	Γ			
☑ Active Learning		Aided by IC	T	☑ Applicable to R	emote Class	☐ Instructor Professionally Experienced	
0 5							
Course Plan	Τ			T _			
Theme Goals							

		What is Clobal Studios?	
	1st	How international societies are created and why we need a theory of international relations.	To fully understand the differences between the natural and social sciences, which are usually studied, and the international community.
		MDGs and SDGs	
	2nd	Focuses on new ways of setting goals in the international community and considers international cooperation.	Understand the new international sustainable development goals and the role of Japan in the industrial world.
		Contemporary International Political Economy International Politics	Understand the basic mechanisms of international
	3rd	Students will learn about economics and the actual international financial crisis and examine it in light of the market and legal system.	politics and the international economy, which are closely related to the industry.
		Security, International Cooperation, and National Interests	Understand the relationship between the state
	4th	Students will learn about the transformation of the international community and the resocialization of the concept of security, and examine and discuss the relationship between the state and the international community.	Understand the relationship between the state and the international community, and be able to articulate this understanding in their own discourse.
1st Quarter		International Sociology (Migration Issues and the EU) (1)	Understand the current situation of immigration in
	5th	Each student will present a case study of immigration policy in the U.S. and various issues in the EU, and deepen their awareness of these issues through discussion and other means.	the U.S. and Europe, and be able to formulate one's own opinions on the pros and cons of immigration policies.
		International Sociology (Migration Issues) (2)	
	6th	Students will present various issues of immigration in the former Soviet Union, Germany, and the UK based on each case study. The discussion will be held on the problems and the way forward.	Understand various problems occurring in various countries, including refugee issues, and be able to consider the relationship between the state and its people.
		Quizzes and assigned reports	
	7th	To confirm the discourse in Global Studies and to test the understanding of various students on each of the issues. Provide guidance on the progress and content of the assigned reports related to each student's presentation	Understand the importance of knowing what each student is interested in in the international community and expressing it in writing.
		•	
	8th	Students will present on political, historical, and economic issues in East Asia (China, Taiwan, and the Korean Peninsula). Each student will also discuss and debate the geographical proximity	Understand geopolitical issues in East Asia, which is geographically close to Japan.
		Issues in Asia (2)	
	9th	Each student will present a paper on various issues in Southeast Asia and Oceania, including actual surveys.	To understand Southeast Asia and Oceania in general, with which we have many academic exchanges.
	10th	Issues in Asia (3) To encourage consideration of international society from the perspective of Okinawa. The faculty will also report on field research conducted by the faculty on ethnic issues in South Asia and the current state of happiness surveys in Bhutan, the Land of Happiness, and consider national strategies.	Understand the geopolitical role of Okinawa, a crossroads of civilizations. Understand geopolitical issues in South Asian countries, including Bhutan.
	44.1	Challenges to Development, Poverty, and Discrimination (1)	Understand that Japan has been actively involved
2nd Quarter	11th	Each student will present in-depth case studies from Nepal, Thailand, and Cambodia and discuss the pros and cons of development.	in development in Southeast Asia and South Asia, including the reasons for this.
		Challenges to Development, Poverty, and Discrimination (2)	
	12th	Recent examples of gender in South Asia, development in Africa and Latin America will be used to examine what international development should look like. We will also deepen our understanding of JICA, the actual Japanese government development organization.	Understand that the elimination of poverty is one of the most urgent issues in the SDGs, and think about what each student can do as an industrialist to solve this problem.
		The 21st Century and the New International	
	13th	Society (1) The latest discourses on globalization and its paradoxes will be presented and examined through presentations and discussions.	Understand globalism, localism, and globalization, and have knowledge of specific corporate movements and social movements.
	Quarter	2nd 3rd 4th 1st Quarter 5th 6th 7th 9th 10th 2nd Quarter 11th 12th	Now international relations.

		14th	The 21st Century Society (2) The course will ex contemporary inte understanding of	amine issues of te	errorism in	Able to understand the reality of international terrorism and the current situation. Understand what measures countries are taking to deter such terrorism.			
			The 21st Century Society (iii) The reality of envivil be learned fro environmentally a relationship betweenvironmental iss internationally wil	ronmentally cons m the current situ dvanced countries sen industrial peo	cious behavior uation in s, and the ole and the	Understand the various discourses on global studies that have been presented. To be able to have an opinion on how to deal with international issues as an industrialist.			
		16th	Final Examination		A final exam and a final report will be				
Evaluation	on Me	ethod and \	Weight (%)					_	
		Assignments Exams	& Presentation	Peer Evaluation	Attitude (attendance and questions asked in class)	Portfolio	Other/Quiz	Total	
Subtotal		50	20	0	20	0	10	100	
Basic Skills			10	0	20	0	0	55	
Specialized Skills			0	0	0	0	10	25	
Cross Field Skills	ross Field 10 10			0	0	0	0	20	

А	Akashi College Course Information			Year	2024			Course Title	Geophysics	
Course	Informa	tion								
Course Co	ode	6003				Course Catego	ry	General /	' Elective	
Class Form	mat	Lecture				Credits		Academi	Credit: 2	
Departme	ent	Engineer	ring	d Electronic	System	Student Grade		Adv. 1st		
Term		Second 9	Seme	ster		Classes per We	eek	2		
Textbook Teaching		Printed r	nater	ials						
Instructor	r	YOKOYA	MA M	asahiko						
(1) Learn seismic wobservation (2) Learn described (3) Under topograph volcanic e	raves, georon equipm about how in (1). By rstand the ruptions.	observatio magnetism, ent. v the Earth doing this, concept of ng so, learn	, theri 's inte complate the b	mal flow, etcernal structur prehensively tectonics an pasic knowle	c.) and understar re, surface phend understand the d the relationshi dge for consideri	nd their meaning omena, and histo solid Earth syste p between them ng the global en	. Also bry hav m. and the vironm	understand ve been int ne movemenent and di	related to the solid Earth (gravity, d the basic principles of erpreted using the observations ent of the Earth's layers and sasters such as earthquakes and chieve these goals.	
Rubric										
			Ide	eal Level		Standard Leve	l		Unacceptable Level	
Achievem	ent 1		Ful	lly understar echanism for vsical proper	nd the estimating the ties of objects vation results.	Understand the estimating the properties of o observation re-	physic bjects	cal	· ·	
Achievem	ent 2		ob:	sérvation evi	standing of the	Understand whobservation every modern understarth is estimated.	idence standir	the ng of the	Do not understand what kinds of observation evidence the modern understanding of the Earth is estimated on.	
Achievem	ent 3		ph ear er	lly understar enomena su rthquakes ar uptions throu led plate tec	ch as nd volcanic agh the concept	Understand na such as earthq volcanic erupti concept of plat	uakes ons th	and rough the	Do not understand natural phenomena such as earthquakes and volcanic eruptions through the concept called plate tectonics.	
Assigne	d Depar	tment Ob	jecti	ives						
Teachin	g Metho	d								
Outline		currently quantitie of the m physical equipme	rse will have lectures on how the structure and properties of the Earth (mainly the solid Earth) are y understood. Since the purpose of geophysics is to capture the Earth quantitatively using physical es such as gravity and heat, the main purpose of this course is to understand the physical properties laterials that make up the Earth, and explain the basic properties and observation techniques of each quantity. It will also explain the laws of physics and basic structures used in the observation ent. It will be taught by a faculty member who is investigating the magnetic properties of deep-sea at obtained in core drilling at Academia Sinica in Taiwan.							
Style		Classes a	es are held in a lecture style. iaison for this course is Takeuchi.							
Notice		This cou guarante assignme	rse's content will amount to 90 hours of study in total. These hours include the learning time eed in classes and the standard self-study time required for pre-study / review, and completing ent reports. The course plan may change. Lessons are serial, not standalone.							
Charact	eristics o	of Class /	Divi	sion in Le	arning					
□ Active	Learning			Aided by IC	Т	☑ Applicable t	o Rem	note Class	☑ Instructor Professionally Experienced	
	DI-									
Course	rian 		T1				<u>.</u>			
		1st	Earth Expla overv Introd	se guidance , (1) in, as guidar view.	/ The shape and nce, the course p ption of the Eart nes.	policy and	of "ge devel	rstand the	role played by the academic field and the role that physics ays in understanding the Earth's e.	
		2nd	Expla shape	in the definit es for the Ea	ze of the Earth (2 tions of the curre rth (Earth ellipso the basics of po	ently recognized oid and geoid),		Understand the basics of positioning us geometry.		
	3rd Quarter	3rd	Earth	iń what grav 's mass and	rity means, by sh density obtained neaning of gravit	d by using it.	struct		v to estimate the Earth's internal he laws and observed values of s on it.	
		4th	with 9	in the conce	introduce exam	d its relationship ples of crustal			concept of isostasy and the fithe Earth's gravity that is related	
		5th	Expla the m	nic waves in the nature nethods for s tures using t	e of seismic wave surveying underg hem.	es, and explain pround	and h		characteristics of seismic waves mate earthquake information	

		6th	The interior structure of the Earth (Introduce the larger structure of the interior, which has been estimated seismic wave analysis.	e Éarth's	Understand the p survey and the m interior structure	rinciples of a seismic refraction ethod for estimating the Earth's that uses it.	
		7th	The interior structure of the Earth (Introduce the subterranean structure Earth's surface layer, which has bee mainly using seismic wave analysis.	ré of the en estimated	survey and the m	rinciples of a seismic reflection ethod for estimating the shallow t's structure that uses it.	
		8th	Earth heat Explain what is the source of heat in Earth, and show the calorimetric dis the surface layer of the Earth.		the state of the E	neaning of heat in physics and arth's interior that can be ne calorimetric distribution on	
		9th	Geomagnetism Explain the magnetic distribution or surface and how geomagnetism wa Furthermore, explain magnetic ano	Understand the c understanding "W	auses of geomagnetism by /hat does magnetism mean?"		
		10th	Rock magnetism and paleomagnetis Explain the mechanism for rocks be magnetized and introduce the magnetion the past that have been investit.	coming netism shifts	Understand the n geomagnetic info	nechanism that records past rmation in rocks.	
			Continental drift Introduce the classic continental dri Wegener. Also explain the continen restoration by paleomagnetism that a revival of continental drift theory.	riginal information for theory," its interpretations, and the continental drift using current			
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	th uarter	12th	The spreading of the seafloor Explain seafloor's topography and u structure and the relationship betweenomaly distribution in the ocean alof seafloor spreading.	een magnetic	Understand the hypothesis that associates geomagnetic records with continental drift.		
		13th	Plate tectonics (1) Explain the concept and movement the shape their boundaries as the b tectonics.	called plate tector	nderstand the original meaning of the concept lled plate tectonics and its difference from ntinental drift theory.		
		14th	Plate tectonics (2) Use plate tectonics to explain the m the Earth's layers (earthquakes, vol orogeny, etc.)			natural phenomena such as volcanic activities can be ate motions.	
			Plate tectonics (3) Introduce the properties of hotspots the difference between relative and motions. Furthermore, explain the o plate motions.	absolute plate	Understand how mechanism of the	plate motions work within the entire Earth.	
		16th	Final exam				
Evaluation	n Meth	od and V	Veight (%)		•		
			Exercise	Examination		Total	
Subtotal			30	70		100	
Basic Proficiency			30	70		100	
Specialized I	Proficien	су	0 0			0	
Cross Area I	Proficien	су	0	0		0	

А	kashi Co	ollege	Year	2024				Introduction to Nano Materials Design	
Course	Informa	tion							
Course Co	ode	6004			Course Categor	ry	General /	Elective	
Class Forr	mat	Lecture			Credits		Academic	Credit: 2	
Departme	ent	Mechanic Engineeri	al and Electronic	System	Student Grade		Adv. 1st		
Term		First Sem	-		Classes per Week 2				
Textbook		Handouts			,		•		
Teaching Instructor			SHI Hiroshi						
Instructor	Objectiv		חווטטווו						
Objectives Evaluation nanomate Evaluation ideas to o	s are to: n 1: Under erials design n 2: Deepe	rstand the va in through the one's und aly through o	he lectures. lerstanding of quexercises and a	uantum mechanics presentation.	and develop pre	esenta	tion skills i	applying the laws to in expressing one's opinions and es in one's major field. (D, E, H)	
Rubric									
			Ideal Level of	Achievement	Standard Level	of Ach	nievement	Unacceptable Level of Achievement)	
Evaluation 1				learly understands he nanomaterials ds.	The student de material proper the quantum m	rties co	ome from	The student did not describe that material properties come from the quantum mechanics and did not explain the nanomaterials design methods.	
Evaluation	n 2			learly understands now to utilize the hanic algebra.	The student ut quantum mech	tilizes t ianics a	the algebra.	The student did not utilize the quantum mechanics algebra.	
Evaluation	n 3		The student a nanomaterials developing he	applies the design for				The student did not propose the application of the nanomaterials design in her/his field.	
Assigne	d Depar	tment Ob	jectives					•	
	g Metho								
Outline nanomat motions quantum students materials			nologies. An objectial design. Firstof nuclei and elemechanics clariare going to lea , which will be r , which will be r	cologies. An objective of this course is to develop a scientific way of thinking by learning crial design. First, students are going to learn the outline of quantum mechanics, which explains the function and electrons that make up a material. Second, the students are going to learn how mechanics clarifies the composition and characteristics (physical properties) of materials. Lastly, there going to learn the state-of-the-art nanomaterials design method to design highly-functional which will be required in various engineering fields in the future. In the future of this practice lectures are the practice problems with her/his own hands, and to explain her/his					
Style Notice		In this co	to other students easy to understand. by for the preparation / review are 90 hours of study content. who miss 1/5 or more of classes will not be eligible for evaluation.						
<u> </u>		Students	who miss 1/5 o	r more of classes w	vill not be eligibl	e for e	valuation.		
Cnaract	eristics (or Class /	Division in Le	earning	Ι			□ Instructor Dusfessionally	
☑ Active	Learning		☐ Aided by I	CT	☑ Applicable to a positive to a positiv	o Rem	ote Class	☐ Instructor Professionally Experienced	
Course	Plan								
		1	Theme			Goals			
		1st c	Learn the outlir differences betw	um Mechanics (First ne of quantum mech een quantum mech eanics by comparing	chanics and nanics and	The st quant	tudent exp um mecha	plains the differences between anics and Newtonian mechanics	
		2nd L	Outline of Quant Learn the metho mechanically.	um Mechanics (Sec d of expressing mo	cond Half) otions quantum	The st	tudent exp le motion	plains the description of the in quantum mechanics.	
1st		3rd A	Algebra)	m Mechanics 1 (Op Igebra, which is ne nechanics		The st	tudent har intum med	ndles the basic algebra necessary chanics.	
	1st Quarter	4th	Equation) Schrodinger wav	m Mechanics 2 (Some equation is the banics. Learn Schrö	asic equation			plains the relation between wave cle motion.	
		5th	Relations I: Coor	m Mechanics 3 (Cordinates and Mome utation relation bet momentum.	ntum)			perates the commutator brackets and momentum.	
		6th	Relations II: Ang	m Mechanics 4 (Co jular Momentum) utation relation reg um.		The students operates the commutator brackets to coordinates and momentum.			

		7th	Basics of Quantum Operators) Learn about Herm	`	ermitian	The student expl calculates the tir of physical quan	ne evolution o	nitian, and f expectation value	
		8th	Basics of Quantum Potential) Learn the quantur square-well poten	n Mechanics 6 (So		The student deri particle bound by	ves the guant	um states of a Il potential.	
		9th	Basics of Quantum Scattering Problem Learn about scatte the tunnel effects.	n and Tunnel Effe ering problems a	ect)	The student derives the transmission probability through the square-well potential energy barrier.			
		10th	Basics of Quantun Oscillators) Learn about the q oscillators.	`		The student derives the quantum states of Harmonic Oscillator.			
	2nd Quarter	11th	Basics of Quantum Heat) Learn about Einste	`	attice Specific	The student deri solid.	ves the heat o	apacity of Einstein	
		12th	Electron Configura Learn about the q bounded by the Co	uantum states of	an electron	The student explains the quantum states of an electron in an atom.			
		13th	Electron Configura Quantum Statistic Learn about the e the quantum stati elements.	s) xistence of spin.	the outline of	The student explan atom.	lains the electi	ron configuration in	
		14th	Cohesion Mechani Bond, Covalent Bo Learn the cohesion materials.	and Metallic F	Bond)	The student explosed and metallication the cohes materials.	ic bonds)	•	
	15th		Density Functiona Material Design Learn the density principle calculatio functional theory, using the first-prir	functional theory on based on the c	, the first lensity als design	The student explains the nanomaterials design methods.			
		16th	Term-end examin	ation					
Evaluatio	n Meth	nod and V	Veight (%)	T	T		1		
	Examinatio		Practice & Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total	
Subtotal	Basic Ability 20 Technical 50		20	0	0	0	0	100	
Basic Ability		<u> </u>	5	0	0	0	0	25	
Technical Ability		l	5	0	0	0	0	55	
Interdisciplinar 10 Ability			10	0	0	0	0	20	

А	kashi Co	llege	Year	2	024			ourse Title	Culture and Communication	
Course	Informat	ion		•			•			
Course Co	ode	6005				Course Categor	у	General ,	/ Elective	
Class Forr	mat	Lecture				Credits		Academi	c Credit: 2	
Departme	ent	Engineer		nic Sy	stem	Student Grade		Adv. 1st		
Term		First Sen	nester			Classes per We	ek	2		
Textbook Teaching										
Instructor		INOUE H	idetoshi							
	Objective									
(1) Deepe (2) Impro (3) Becon	en understa ve one's a ne proficie	anding of d bility to foll nt with TOE	ow English pro TC format que	s. nunci stions	ation and rhyth	ım.				
Rubric			i							
			Ideal Level			Standard Level			Unacceptable Level	
Achievement 1 Achievement 2 Achievement 2 Achievement 3 Achievement 3 Assigned Department Objective Teaching Method Learning a lang thoughts and we			of different	cultur	es.	Deepened unde different culture	es.		Did not deepen understanding of different cultures.	
Achievement 1 Achievement 2 Achievement 2 Achievement 3 Achievement 3 Assigned Department Objectives Teaching Method Outline Learning a language is thoughts and values of communication. Taking skills by understanding exercise is somewhate In order to achieve the Look up important we Review the model dis				Engli on and	sh I rhythm.	Gained English and rhythm.	pronui	nciation	Did not gain English pronunciation or rhythm.	
Achievem	ent 3 Fully became proficient with TOEIC format questions. d Department Objectives g Method Learning a language is more than just le thoughts and values of the people who communication. Taking the UK and busi skills by understanding the differences a exercise is somewhat easy, so it is not in a language is more than just le thoughts and values of the people who communication. Taking the UK and busing the differences are exercise is somewhat easy, so it is not in a language is more than just le thoughts and values of the people who communication and rnythm. In order to achieve the goals, students of the people who communication and rnythm.				icient with estions.	Became proficie format question	ent wit ns.	Did not become proficient with TOEIC format questions.		
Assigne	d Depart	ment Ob	jectives							
Teachin	g Metho	d								
Outline		thoughts commun skills by	and values of ication. Taking understanding	the p the l the d	eople who spea JK and busines: ifferences and (ak it. Therefore, s English as an e commonalities w	these xampl ith Jap	exercises e, the goo oan. The l	will cover language, culture, and al is to improve students' English	
Style		In order to achieve the goals, students will need to self-study as follows: - Look up important words in advance and understand them in English Review the model dialogs learned in the class and practice using the acc							npanying CD until able to recite it.	
Notice		- Reasse	ssments will no tions without r	ot be easor	permitted if stu Is such as abse	gnments. Idents are late of Ince due to suspe Vill not be eligible	ension.	etc.	ne class and unable to work or give	
Charact	eristics o		Division in			···· ··· · · · · · · · · · · · · · · ·		<u> </u>	,	
☐ Active			☐ Aided by			☐ Applicable to	o Rem	ote Class	☐ Instructor Professionally Experienced	
			•			•				
Course	Plan									
			Theme				Goals			
		1st		rview	guidance of the first sen aluation metho					
		2nd	Check In and \	Nork (eadin at the	Out g comprehensi counter		Under	stand con	versations at the counter.	
		3rd	What Will the ' Listening and r weather Chapter 2: Clo	eadin	ner Be Like? g comprehensi	on about the	Under	stand the	weather.	
	1st Quarter	4th	A London with Listening and r London buses Chapter 3: Gro	eadin	g comprehensi	on about	Under	stand Lon	idon buses.	
1st Semeste r		5th	Back to the Fu Listening and r railways Chapter 4: Coo	eadin	g comprehensi	on about	Under	stand rail	ways.	
		6th	Shop-'n'-Chat Listening and r shopping Chapter 5: Eat		g comprehensi	on about	Under	stand sho	pping.	
			First semester				Reviev	v the topi	cs covered in the first semester.	
			Midterm exam							
	2nd	0.1	More Than Jus Listening and r concept of pos Chapter 6: Sho	eadin	a comprehensi	on about the	Under	stand the	concept of post offices.	
	Quarter	10th	Off the Beaten Listening and r Chapter 7: Ho	eadin	g about tourisn	n	Under	Inderstand tourism.		

		11th	Dining Out Diversity Listening and reading culture Chapter 8: The Weath	comprehension about food	Understand food culture	2.	
		12th	Afternoon Tea Listening and reading Chapter 9: At a Movie	about afternoon tea Theater	Understand afternoon tea.		
		13th	The Beatles Are Forev Reading about the Bea Chapter 10: Sports		Understand the Beatles		
		14th	Football: Sport or Bus Reading about footbal Chapter 11: Traffic an		Understand football.		
		15th	Second semester over	all review	Review the topics cover semester.	red in the second	
		16th	Final exam				
Evaluation	n Meth	od and	l Weight (%)				
	Examination		xamination	Short Tests	Other	Total	
Subtotal		80		20	0	100	
Basic Profic	Basic Proficiency 80		20	0	100		
Specialized	l Proficien	cy 0	<u> </u>	0	0	0	
Cross Area	Proficien	cy 0		0	0	0	

	Akashi Co	ollege	Year	2024		Course Title	Overseas Training
Course	Informa	tion					
Course C	ode	6006			Course Categor	y General /	Elective
Class For	mat	Practical to			Credits	School C	redit: 2
Departme	ent	Mechanica Engineerin	ıl and Electronic เฉ	System	Student Grade	Adv. 1st	
Term		Year-roun	d		Classes per We	ek 2	
Textbook	and/or Materials	none					
Instructo							
Course	Objectiv	'es					
(1) To en (2) To ac	hance the	educational o	experience thro ve by joining ac	ugh active particip ctivities in differen	oation in overseas t cultural environ	s training. ments.	
Rubric							
			Ideal Level		Standard Level		Unacceptable Level
Achievem	nent 1		To enhance the experience thre participation in training.	ough active	To enhance the experience thro participation in training.	ugh active	Did not enhance the educational experience through active participation in overseas training.
Achievem	nent 2			oroad perspective vities in different nments	To achieve a br by joining activi cultural environ		Did not achieve a broad perspective by joining activities in different cultural environments
Achievem	nent 3		Communicate	using English	Communicate	using English	Can not communicate using English
Assigne	ed Denar	tment Obj	ectives		1		Lenghon
	ng Metho		ccuves				
Outline		period. The to 90 hour training de	e number of trans or more, inclusions), pos estinations), pos	aining days shall buding overseas tra st-event report me	e ten days or mo ining, prior guida eeting, and repor	re. This course ance (manner ed ts to handle the	od is during the summer holiday requires self-study time equivalent lucation, a preliminary survey of related organizations. Advanced I fulfill this course requirement.
Style		Voor des	v aantaat with v		amaia advisau Ast		th local people during the training
Notice		period, co	mmunicate with d language.	them, keep an a	ttitude suitable fo	or trainees, bein	g careful with manners such as
Charact	teristics (of Class / [<u>Division in Le</u>	arning			
☑ Active	Learning				1		T
			☑ Aided by IC	_	☑ Applicable to	Remote Class	☐ Instructor Professionally Experienced
Courco	Dlan		☑ Aided by IC	_	☑ Applicable to	Remote Class	
Course	Plan	 	,	_			
Course	Plan		heme	_		Goals Explanation of t	Experienced , , , , , , , , , , , , , , , , , , ,
Course	Plan		,	_		Goals Explanation of t at the training s	he course, advice about etiquette afety.
Course	Plan	1st G	heme	_		Goals Explanation of t at the training s	he course, advice about etiquette afety.
Course	Plan	1st G 2nd Pi 3rd id	heme uidance ractice	_		Goals Explanation of t at the training s Individual techn training destinal idem	he course, advice about etiquette afety.
Course		1st G 2nd Pi 3rd id 4th id	heme uidance ractice em	_		Goals Explanation of t at the training s Individual techn training destinat idem idem	he course, advice about etiquette afety.
Course	1st	1st G 2nd Pr 3rd id 4th id 5th id	heme uidance ractice em lem	_		Goals Explanation of t at the training s Individual techn training destinal idem idem idem	he course, advice about etiquette afety.
	1st	1st G 2nd Pi 3rd id 4th id 5th id 6th id	heme uidance ractice lem lem	_		Goals Explanation of t at the training s Individual techn training destinal idem idem idem idem	he course, advice about etiquette afety.
1st Semeste	1st	1st G 2nd Pr 3rd id 4th id 5th id 6th id 7th id	heme uidance ractice lem lem lem	T T		Goals Explanation of t at the training s Individual techn training destinal idem idem idem	he course, advice about etiquette afety.
1st	1st	1st G 2nd Pr 3rd id 4th id 5th id 6th id 7th id 8th N	heme uidance ractice lem lem lem lem lem o mid term exa	T T		Goals Explanation of t at the training s Individual techn training destinal idem idem idem idem idem idem	he course, advice about etiquette afety.
1st	1st	1st G 2nd Pr 3rd id 4th id 5th id 6th id 7th id 8th N 9th id	heme uidance ractice lem lem lem lem lem lem o mid term exalem	T T		Goals Explanation of t at the training s Individual techn training destinatidem idem idem idem idem idem idem idem	he course, advice about etiquette afety.
1st	1st	1st G 2nd Pi 3rd id 4th id 5th id 6th id 7th id 8th N 9th id 10th id	heme uidance ractice em lem lem lem lem o mid term exalem lem	T T		Goals Explanation of t at the training s Individual techn training destinatidem idem idem idem idem idem idem idem	he course, advice about etiquette afety.
1st	1st Quarter	1st G 2nd Pi 3rd id 4th id 5th id 6th id 7th id 8th N 9th id 10th id 11th id	heme uidance ractice lem lem lem lem lem lem lem lem lem le	T T		Goals Explanation of t at the training s Individual techn training destination destination destination dem	he course, advice about etiquette afety.
1st	1st	1st G 2nd Pr 3rd id 4th id 5th id 6th id 7th id 8th N 9th id 10th id 11th id 12th id	heme uidance ractice lem lem lem lem o mid term exa	T T		Goals Explanation of t at the training s Individual techn training destinatidem idem idem idem idem idem idem idem	he course, advice about etiquette afety.
1st	1st Quarter	1st G 2nd Pr 3rd id 4th id 5th id 6th id 7th id 8th N 9th id 10th id 11th id 12th id 13th id	heme uidance ractice lem lem lem lem lem lem lem lem lem le	T T		Goals Explanation of t at the training s Individual techn training destinal idem idem idem idem idem idem idem idem	he course, advice about etiquette afety.
1st	1st Quarter	1st G 2nd Pr 3rd id 4th id 5th id 6th id 7th id 8th N 9th id 10th id 11th id 12th id 13th id 14th id	heme uidance ractice lem lem lem lem o mid term exalem lem lem lem	T T		Goals Explanation of tat the training s Individual techn training destinatidem idem idem idem idem idem idem idem	he course, advice about etiquette afety.
1st	1st Quarter	1st G 2nd Pr 3rd id 4th id 5th id 6th id 7th id 8th N 9th id 10th id 11th id 12th id 13th id 14th id 15th id	heme uidance ractice lem lem lem o mid term exa lem lem lem lem	ms		Goals Explanation of tat the training s Individual techn training destinatidem idem idem idem idem idem idem idem	he course, advice about etiquette afety.
1st	1st Quarter	1st G 2nd Pi 3rd id 4th id 5th id 6th id 7th id 8th N 9th id 10th id 11th id 12th id 13th id 14th id 15th id 15th id	heme uidance ractice lem lem lem o mid term exa lem	ms		Goals Explanation of tat the training s Individual techn training destinatidem idem idem idem idem idem idem idem	he course, advice about etiquette afety.
1st	1st Quarter	1st G 2nd Pr 3rd id 4th id 5th id 6th id 7th id 8th N 9th id 10th id 11th id 12th id 13th id 14th id 15th id 15th id	heme uidance ractice em	ms		Goals Explanation of t at the training s Individual techn training destination destination destination destination destination dem	he course, advice about etiquette afety.
1st Semeste r	1st Quarter 2nd Quarter	1st G 2nd Pr 3rd id 4th id 5th id 6th id 7th id 8th N 9th id 10th id 11th id 12th id 13th id 14th id 15th id 15th id 15th id 2nd id	heme uidance ractice lem lem lem lem lem lem lem lem lem le	ms		Goals Explanation of t at the training s Individual techn training destination destination destination destination dem	he course, advice about etiquette afety.
1st	1st Quarter	1st G 2nd Pr 3rd id 4th id 5th id 6th id 7th id 8th N 9th id 10th id 11th id 12th id 13th id 14th id 15th id 15th id 3rd id 3rd id	heme uidance ractice lem lem lem o mid term exa lem	ms		Goals Explanation of tat the training s Individual techn training destinatidem idem idem idem idem idem idem idem	he course, advice about etiquette afety.
1st Semeste r	1st Quarter 2nd Quarter	1st G 2nd Pr 3rd id 4th id 5th id 6th id 7th id 8th N 9th id 10th id 11th id 12th id 13th id 14th id 15th id 15th id 3rd id 4th id 5th id 5th id 15th id 15th id 15th id 16th N	heme uidance ractice lem lem lem lem lem lem lem lem lem le	ms		Goals Explanation of tat the training s Individual techn training destinatidem idem idem idem idem idem idem idem	he course, advice about etiquette afety.
1st Semeste r	1st Quarter 2nd Quarter	1st G 2nd Pr 3rd id 4th id 5th id 6th id 7th id 8th N 9th id 10th id 11th id 12th id 13th id 14th id 15th id 15th id 3rd id 4th id 5th id	heme uidance ractice lem lem lem o mid term exa lem	ms		Goals Explanation of tat the training s Individual techn training destination	he course, advice about etiquette afety.

		8th	No mid term exar	ns						
		9th	idem			idem	idem			
		10th	idem			idem	idem			
		11th	idem			idem	idem			
	4th	12th	idem			idem	idem			
	Quarte	er 13th	idem			idem	idem			
		14th	idem			idem				
		15th	idem			idem				
		16th	No End Term Exa	ms						
Evaluati	ion Me	ethod and \	Weight (%)							
		Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total		
Subtotal		0	0	0	0	0	0	0		
Basic Proficienc	у	0	0	0 0		0	0	0		
Specialize Proficienc	ed Y	0	0	0	0	0	0	0		
Cross Are Proficienc	a y	0	0	0	0	0	0	0		

A	Akashi C	ollege	Year	2024		Course Title	Creative Faculty Development		
Course	Informa	ition		1		, ride	12 Stolopinione		
Course C		6007			Course Categor	y Specializ	zed / Compulsory		
Class For		Experime	ent		Credits		Credit: 2		
Departme	ent	Mechanic Engineer	cal and Electronic	System	Student Grade	Adv. 1st	ī.		
Term			Semester		Classes per Week 4				
Textbook									
Instructo	Materials or	NAKANI	SHI Hiroshi						
	Objectiv								
(1) Can s	set goals a	nd plan wor		•			progress and work results		
(2) Can a	apply expe demonstra	rtise and pr te communi	esent problem so cation skills and t	llution plan. teamwork through	cooperation and	d work distribut	ion in group work.		
Rubric					•				
			Ideal Level		Standard Level		Unacceptable Level		
Achievement 1			Can set goals a group basis, voluntarily, an progress and effectively.	and plan work on perform work d report on work work results	Can set goals a a group basis, p voluntarily, and progress and w	perform work I report on worl	on a group basis, perform work		
Achievement 2 Achievement 3 Assigned Department Ob Teaching Method			Can apply exp practicable pro plans.	ertise and present oblem solution	Can applyexper a problem solut	tise and preser tion plan.	Cannot apply knowledge and present a problem solution plan		
skills and teamwo group work.				k, and communication	Can cooperate, and demonstra communication teamwork throu	te skills and	work, and demonstrate communication skills and		
Assigne	ed Depar	tment Ob	jectives		•		·		
Teachir	ng Metho	od							
Outline		work, an of working handling assignment	nd will foster their ng on a task, the devices, and inv ents. Lapply their know	r ability to solve pr y will widely develor estigating perform	oblems in engine op the relevant k ance, etc. to fos	eering design in nowledge throu ter creativity th ed Course stud	administrative roles through group a practical manner. In the process ugh assembling equipment, irough engineering design y and conduct creative experiments		
Style		and exer from diff explanat groups v	cises for assignm erent Advanced (ions on basic kno	nents under the fact Courses and work on Wedge, etc. are g	culty in charge. S on the assignme iven, students w	Students will for Int. After the as In conduct all o	rm groups of around 4 members signment theme is presented and of the Plan-Do-See activities in diverbally in the discussion and		
Notice		guarante	eed in classes and ent reports. Stud	amount to 90 hou d the standard self ents will be divided r more of classes v	-study time requ d into groups du	iired for pre-stu ring guidance.	s include the learning time add / review, and completing		
Charact	teristics	of Class /	Division in Le	earning	_				
☑ Active	e Learning		☑ Aided by IO	CT	☑ Applicable to	Remote Class	☐ Instructor Professionally Experienced		
Course	Plan								
Cour SC	lan		Theme			Goals			
		1st	Class guidance, t Receive class gui schedule, activity	team division, and idance and check to conditions, and e into teams and do	he overall valuation	Understand the content.	e course aims and assignment		
		2nd		solution plans for t nd implement an a		contribute to the	carily in group activities and ne team by demonstrating skills and teamwork.		
			Same as week 2			Same as week			
2nd Semeste r	3rd Quarter	4th	problem solution give an oral pres plan.	and presentations: plans for the assig entation of an imp	nment and lementation		others how effective and proposed solutions and plans are.		
-			Can reconsider ir make a better im results of the pla	n groups the activit nplementation plan nning discussion.	ty plans and based on the	Same as week	2		
		H	Same as week 5			Same as week			
			Same as week 5			Same as week			
		+	Same as week 5			Same as week			
	4th		Same as week 5			Same as week 2			
	Quarter		Same as week 5			Same as week			
		11th	Same as week 5			Same as week 2			

	12th	S	ame as week 5			Same as week 2				
	13th	S	ame as week 5			Same as week 2				
	14th	S	ame as week 5			Same as week 2	Same as week 2			
	15th	ln	roblem solution	ion: Present the plan and give an ne outcome of im	oral	Can explain to others how reasonable the implemented solution plan was and the outcome of implementing it.				
	16th	N	lo final exam							
Evaluation	Method a	nd We	eight (%)							
	Examina	tion	Presentation	Report	Behavior	Portfolio	Other	Total		
Subtotal	0		40	50	10	0	0	100		
Basic Proficiency	0		5	5	10	0	0	20		
Specialized Proficiency			10	20	0	0	0	30		
Cross Area Proficiency	0	0 2		25	0	0	0	50		

А	kashi Co	llege		Year	2024			ourse Title	Engineering Topics for Advanced Course Students	
Course	Informat	ion								
Course Co	ode	6008				Course Catego	ry	Specialize	ed / Compulsory	
Class Forr	mat	Lecture				Credits		Academic	: Credit: 2	
Departme	ent	Enginee	ring	and Electronic S	System	Student Grade		Adv. 1st		
Term		Second	Sem	ester		Classes per We	eek	2		
Textbook Teaching	Matérials									
Instructor		· ·	ABE	Moriyoshi,HIR/	AISHI Toshihiro,N	IAKANISHI Hiros	shi,NOI	MURA Hay	ato,	
(1) Und (2) Lea	rn about th	e latest te	sues	in areas differ	ent from one's ov	vn area of speci	alty.		the status of their efforts. n each area of specialty.	
Rubric	in ana ana	icrotaria to	pico	about teermon	ogico ana rescare		(ISCOITE)	z menary i	in each area or specialty.	
Rabile			Ic	deal Level	Standard Level			Unacceptable Level		
Achievem	ent 1		U te o	Inderstand the echnological iss wn area of spe	sues in one's	Understand the technological is own area of sp solutions and t efforts.	e latest ssues ir ecialty.	n one's . their	Do not understand the latest technological issues in one's own area of expertise, their	
Achievem	ent 2		a		e latest issues in from one's own	Learn about th areas different area of specialt	from o		Do not learn about the latest issues in areas different from one's own area of specialty.	
Achievement 3 Assigned Department Ob		al re fr	earn and unde bout technolog esearch that ai iendly in each pecialty.	gies and · re co-existence	Learn and undo about technolo research that a friendly in each specialty.	gies an	id existence	Do not learn and understand topics about technologies and research that are co-existence friendly in each area of specialty.		
Assigne	d Depart	ment Ol	ojec							
Teachin	g Metho									
Outline		In order to broaden students' backgrounds as an engineers, it is impleted their own areas of specialty but learn other areas, too. In this cours expertise will give knowledge of the trends in technological developing inside and out of this course. Classes will cover various topics and to Nakanishi: Guidance and interdisciplinary area (three classes) Fujiwara: Mechanical systems (three classes) Nomura: Electronic and information systems (three classes) Watanabe: Urban systems (three classes) Hiraishi: Building system (three classes) By learning about various of students will develop universal thinking and flexible development callieds.						rse, faculty pment in a take place	y members from different areas of an interdisciplinary manner both in a relay form: nent and research processes.	
Style		Fujiwara Nomura Watanal Hiraishi	will will oe w will t	week-period, Nakanishi will teach the guidance in week 1 in a lecture-style format. will teach classes from weeks 2 to 4 in a lecture-style format. vill teach classes from weeks 5 to 7 in a lecture-style format. ver will teach classes from weeks 8 to 10 in a lecture-style format. ver vill teach classes from weeks 11 to 13 in a lecture-style format. ver vill teach classes from weeks 11 to 13 in a lecture-style format. ver vill teach classes from weeks 11 to 13 in a lecture-style format. ver vill teach classes in the form of off-campus exercises.						
Notice		guarant assignm explaine	eed i ent r d in	n classes and reports. Althou a way that is e	the standard self-	study time requestions requestions requestions requesting the students is students is sections.	uired fo side of should	r pre-stud students' be able to	include the learning time ly / review, and completing own specialties, they will be properly learn them.	
Charact	eristics o	of Class /	' Div	vision in Lea	arning					
☑ Active	Learning			Aided by IC	Γ	☑ Applicable t	o Remo	ote Class	☐ Instructor Professionally Experienced	
	N.									
Course	Plan						I _			
			The				Goals			
1st i		Expl Adva met impo	anced Course hods and othe ortance of acti wledge throug	anishi) se of Engineering Students. Inform r details. Explain vely learning a wi h self-experience, ology topics, etc.	the evaluation the ide range of		stand an c arning pla	overview of this class and create a n.		
2nd Semeste r	3rd Quarter	2nd	Prob ever hous will prob	plems related t rywhere in eng sing and electr discuss the ba plems. (Fujiwa	mal Fluid Problems in Engineering lems related to thermal fluid are faced ywhere in engineering, such as cooling of				the basic laws of heat conduction er, and be able to perform basic ions.	
problems Practical When pe of a then and simp			en performing thermal problesimplify the ac	Problem Analysis a hand-calculation level analysis lem, it is necessary to model			Can model each element and perform thermal calculations for practical thermal problems.			

		4th Th	hallenges in Anallo perform analysiand-calculation leat transfer coeffequired. We will unstructing such auidelines for more fujiwara)	is of thermal prolevel, thermophys icients, and othe inderstand the pland atabase and c	blems at the ical properties, r values are rocess of liscuss	Can discuss the production discussion coefficients.	procedures for cal properties ar	obtaining non- nd heat transfer	
		5th L	utomation 1 (Nor earn about the co sing existing case	encept of work au	utomation,	Can explain even	ts that can be a	automated.	
		6th L	utomation 2 (Nor earn about platfo utomation.		grammatic	Can explain a pla automation.	tform used for	programmatic	
		7th L	utomation 3 (Nor earn how to clarif ask, consider the through program	fy thé procedure form of the outp	to automate a ut, and realize	Can explain procedures for automating repetitive tasks in research activities and daily routines through programs.			
		8th D	evelopment and	Environment(Wa	tanabe)	Can explain the in on the environment function of the na	ent, and the dis		
			nvironmental load ssessment metho		ntal impact	Can explain indic assessment(LCA) assessment meth human activities), and environm nods related to	the impact of	
		10th E	nvironmental Risl	k and Ethics(Wat	anabe)	Can explain the t natural subsisten resource finitene environmental ris	ce, inter-generass, as well as th	ational ethics, and le trilemma of	
		a G 11th co p	ssistance for devireas (Hiraishi) live an introductio ountries and disa: rovided so far, ar echnologies can b the global comn	on on assistance is ster areas that had not consider the way see applied to local	for developing ave been vay in which	Can recognize the importance of local characteristics also in a globalized society.			
		A G 12th d n	ppropriate techno live an introductic echnology, examp eveloping countri neasures in Japan echnology should	blogy (Hiraishi) on on the need fo bles of its applica es and those in e to think about tl	tion in environmental	Can explain the c technology and g			
4th Qua	arter	13th (I	ecycling and bend Hiraishi) xplain how to tre uch as fallen leav nd human waste, ecycling-based so	at biological orga es, weeds, wood and how the sys	inic materials s, food waste, stem for a	Can explain examples of material recycling in a recycling-based society.			
			nterdisciplinary ar is a summary of t ange of the latest icluding shipbuild municating, po n exercise on boa laritime Sciences AIJINMARU.	his course, learn science and teching, navigating, ort and city planr ard the Graduate	about a wide nnology, ning, through School of	Can organize and explain the knowledge gained through the on-board exercise.			
		15th Co	nterdisciplinary are a summary of the latest of the latest or the latest	his course, learn science and teching, navigating, ort and city plant the Graduate Kobe University's will be an intensi	about a wide nnology, ning, through School of s training ship,	Can organize and explain the knowledge gained through the on-board exercise.			
	Į.								
			o final exam						
Evaluation				Muhupi					
Evaluation		od and W		Mutual Evaluations between students	Behavior	Portfolio	Other	Total	
	Meth	od and W	eight (%)	Evaluations between	Behavior	Portfolio 0	Other	Total	
Subtotal Basic	Metho	od and W	eight (%) Presentation	Evaluations between students					
Evaluation Subtotal Basic Proficiency Specialized Proficiency	Metho Rep	od and W	eight (%) Presentation	Evaluations between students	10	0	0	100	

Д	kashi Co	ollege		Year	20	24			Course Title	Engineering Presentation I	
Course	Informa	tion									
Course Co		6009					Course Catego	ry	- t ·	ed / Compulsory	
Class For	mat	Seminar			- 61		Credits		School C	redit: 1	
Departme	ent	Engineer		l Electronic	c Sysi	tem	Student Grade Adv. 1st				
Term		First Ser	nester				Classes per We	eek	2		
Textbook Teaching		A separa	ate han	dout will b	be pro	vided.					
Instructor		SUYAMA	. Taikei	,TAKEDA N	Naho						
	Objectiv			,							
discuss th (2) Can s discuss th (3) Under Theme 2	nem orally. et a themen nem orally. stand eng and prese	e on one's on ineering etl ntations of	own in hics thi its resi	Theme 1, rough rese	prepa earch	are materials of the ethics	(e.g., summary	and :	slides) for t	presentation, and present and the presentation, and present and the cademic societies covered in	
Rubric											
			Idea	al Level			Standard Level			Unacceptable Level	
Achievement 1 Achievement 1 Can set a problem for th theme, prepare material summary and slides) for presentation, and preser discuss them orally in a persuasive manner. Can set a theme on one'						terials (e.g., s) for the present and in a	Can set a prob theme, prepare summary and presentations, discuss them o	e mat slides and p	terials (e.g., s) for the present and	given theme, prepare materials (e.g., summary and slides) for	
Achievement 2				pare mater Imary and	rials (I slide and p orally	e.g., s) for the present and in a	Can set a them materials (e.g. slides) for the present and dis orally.	, sum prese	nmary and entation, and	Cannot set a theme, prepare materials (e.g., summary and slides) for the presentation, and present and discuss them orally.	
Achievement 3			thro code acad	y understa lain engine lugh resea les, etc. of demic socie sentations	eering arch o the p ieties	g ethics f the ethics professional and	through research of the ethics codes, etc. of the professional academic societies and			Do not understand engineering ethics through research of the ethics codes, etc. of the professional academic societies and presentations of its results.	
Achievem	ent 4		Und	erstand ar	nd ca ce of r	n practice ole sharing	Understand the role sharing the work.	e imp rough	ortance of team	Do not understand the importance of role sharing through team work.	
Assigne	d Depar	tment Ob	ojectiv	/es							
Teachin	g Metho	d									
Outline		graphica matters. viewpoir their imp importar	al prese Stude ats of (pression ace of s	entations, onts will be and subject on and critishamile.	oral p givei clarit tiques les an	resentations, n a variety of ty, (2) conter s to raise the	etc. in order to assignments, and clarity, (3) applements of the coners by preparing	enha nd asl peal, e itent.	nce student ked to evalu etc. In addit Furthermon	ch as written presentations, cs' ability to express technical late each other based on the tion, the teaching staff will offer re, students will understand the ss through team work. (See class	
Style		After Na	ķai and	Ishimatsı	u hav	e given their	lectures on the	funda	mental top	ics, etc., students will give	
Notice	This course's content will amount to 90 hours guaranteed in classes and the standard self-sesignment reports. Emphasis will be on pre-						urs of study in to f-study time requesenting and dis esenting and dis ned time. Stude	tal. T uired cussi nts ar	hese hours for pre-studing the sum re expected	include the learning time dy / review, and completing mary and slides students have to be able to evaluate other	
Charact	eristics o	of Class /	Divis	ion in Le	earn	ing	T			T	
✓ Active Learning ☐ Aided by ICT							☑ Applicable t	o Rer	note Class	☐ Instructor Professionally Experienced	
Course	Plan							1			
			Theme			/D==1 4 7 1 1		Goal	S		
1st Ep				n how to watation. Lead report ba for writing	write a arn h ased o	(Part 1: Ishing report as a cown to express on specific sacon 2-page re	written s sentences in a mples. Set a	Unde	erstand the	basics of writing a report.	
1st Semeste r	1st Quarter	2nd	Exchar theme individ	nge and co and excha ually or by	orrect ange y grou	opinions eith p.	en on the given er by everyone	Unde		basic writing of a report in	
		3rd	mind v	vhen creat	tina n	ort 1: Nakai) cortant points naterials for p ere with exan	resentations.	Unde	erstand the	key points for creating materials.	

		,				1			
		4th	Presentation rules There are several i mind when giving They are explained	mportant points presentations in	public. [·]	Understand the opresentations.	o's and don'ts w	hen giving	
		5th	Theme 1 (Free cho slides (Nakai and I Prepare a report w and prepare a 10-r	shimatsu) ith an individuall	y set theme	Can create a report with an individually set theme and prepare a 10-minute presentation.			
		6th	Theme 1 presental Ishimatsu) Each individual will about Theme 2 foll with everyone.	give a 10-minut	e presentation	Give a 10-minute presentation about Theme 1 and have a 10-minute discussion with everyone. Also, evaluate each other's presentations.			
			Theme 1 presental Ishimatsu) Same as above	tion (Part 2: Nak	ai and	Give a 10-minute and have a 10-m Also, evaluate ea	inute discussion	with everyone.	
		8th	Theme 1 presental Ishimatsu) Same as above	tion (Part 3: Nak	ai and	Give a 10-minute and have a 10-m Also, evaluate ea	inute discussion	with everyone.	
	9th 10th		Theme 1 presental Ishimatsu) Same as above	tion (Part 4: Nak	ai and	Give a 10-minute and have a 10-m Also, evaluate ea	inute discussion	with everyone.	
			Theme 1 presental Ishimatsu) Same as above	tion (Part 5: Nak	ai and	Give a 10-minute and have a 10-m Also, evaluate ea	inute discussion	with everyone.	
		11th	Presentation rules Practice the key po with actual example	oints of public pre	Learn the key points for public presentations.				
	2nd	12th	Theme 2 (Code of slides (Part 1: Nak In teams of two to ethics of respective societies. Prepare to 10-minute present	ai and Ishimatsu four, research the professional act to compile report) ne code of ademic	In teams of two tethics of the prof they belong to.	to four, can resea essional academi	arch the code of c societies that	
	(uarter	13th	Theme 2 (Code of slides (Part 2: Nak Same as above	ethics): Preparin ai and Ishimatsu	g reports and)	Working together minute presentat report the ethics academic societie	ion on and sumn of the respective	narize in a professional	
		14th	Theme 2 presental Ishimatsu) In teams, give a 10 Theme 1 and have everyone.	` O-minute present	tation about	In teams, give a 10-minute presentation about Theme 2 and have a 10-minute discussion with everyone. Also, evaluate each other's presentations.			
			Theme 2 presentation (Part 2: Nakai and Ishimatsu) Same as above In teams, give a 10-minute presentation Theme 2 and have a 10-minute discussive everyone. Also, evaluate each other's presentations.						
		16th	No final exam						
Evaluatio	n Met	hod and V	Veight (%)	ı	T	1			
	Re	esume	Presentation&D iscussion	Mutual Evaluations between students	Behavior	Portfolio	Other	Total	
Subtotal	30)	60	10	0	0	0	100	
Basic Proficiency	0		0	0	0	0	0	0	
Specialized Proficiency	30)	60	10	0	0	0	100	
Cross Area Proficiency	0	0 0 0		0	0	0	0		

А	kashi Co	llege	Year	2024			ourse Title	Industrial Materials
Course 1	Informat	tion	<u> </u>	·				
Course Co	ode	6010			Course Catego	ry	Specialize	d / Compulsory
Class Forr	mat	Lecture			Credits		Academic	Credit: 2
Departme	ent	Mechanica Engineeri	al and Electronic ng	System	Student Grade		Adv. 1st	
Term		First Sem	ester		Classes per Week 2			
Textbook Teaching		A separat	e handout will be	e provided.				
Instructor	•	MORISHI	TA Tomohiro, ,T	AKEDA Naho,HIRA	ISHI Toshihiro			
(1) Under on some k (2) Becom control of (3) Under individuall (4) Under various m	kinds of an ne able to concrete s stand the ly studying stand the	e reasons for isotropic matchink about structures. (factors to continue and explain physical qua	aterials. (taught technological inr taught by Taked onsider when ma ning materials of	by Morishita). novation through t a). king environmenta interest to each o magnetism along	he fusion of diffe ally friendly choi ther. (taught by	erent fi ices for Hirais	ields for th materials hi).	lain the engineering application e construction, maintenance, and , and deepen understanding by nd and explain the properties of
Rubric			T					I
Achievem	ent 1		Ideal Level Can explain the anisotropy in n examples of its application.	naterials and	Understand the anisotropy in mathematical elastic moduli.	e cause nateria	ls and	Do not understand he cause of anisotropy in materials.
Achievem	ent 2		Can explain the between their	own specialty and eering, and make	Can explain the between their concrete engine	own sp	ecialty and	Cannot explain the relationship between their own specialty and concrete engineering.
Achievem	ent 3		making enviror	CA analysis for nmentally friendly ustrial materials.	Understand the items to consider for making environmentally friendly choices for industrial materials.			Do not understand the need to make environmentally friendly choices for industrial materials.
Achievem	ent 4		the properties	ted to	Understand the physical quantities related to magnetism, along with units, and understand and can explain the properties of various magnetic materials.			Do not understand the physical quantities related to magnetism, along with units, and do not understand and cannot explain the properties of various magnetic materials.
		ment Obj	jectives					
Teachin	g Metho	<u>d</u>						
Outline		composite of concre for enviro explaining by Hiraish	e. (8 hours, taug te (a typical mat Inmental issues. I materials' envir II.) (4) Understa	tht by Morishita.) erial for urban con (6 hours, taught b ronmental impact	(2) Explain the lastruction), mair y Takeda.) (3) and the propertitics and propert	mecha ntenand Deeper ies of v	nical prope ce and con n understa various ind	regate and particle dispersed erties and reinforcement methods trol techniques, and consideration nding by individually studying and ustrial materials. (8 hours, taught gnetic materials and explain their
The class will be held in an omnibus format by four faculty member Weeks 1-4 (Morishita): Give lectures on the effects of microscopic learn each other on some engineering applications of heterogeneo Weeks 5-7 (Takeda): Students will learn about the mechanical promethods, maintenance and control techniques, and consideration Weeks 8-11 (Hiraishi): After explaining choices of industrial material environmental impact according to a Life Cycle Assessment (LCA), related to their graduate study's special research and use PowerPodisadvantages, and environmental impact. Weeks 12-15 (Kajimura): Students will learn the physical quantitie and become able to understand and explain the properties of various investigate application cases.						properties us materia operties of for enviror ials and the students bint to present the present is the present in the present in the present is the present in the present in the present in the present is the present in the present	als and anisotropic materials. concrete, reinforcement mental issues. e difference in their will select one industrial material sent its advantages, to magnetism along with units, tic materials. Students will also	
Notice		guarantee assignme	ed in classes and nt reports.	amount to 90 hou the standard self- more of classes w	-study time requ	uired fo	or pre-stud	include the learning time y / review, and completing
Charact	eristics c	of Class /	<u>Division in Le</u>	arning	T			<u></u>
☑ Active	Learning		☑ Aided by IC	T	☑ Applicable to a positive to a positiv	o Remo	ote Class	☐ Instructor Professionally Experienced
Course	Plan	<u> </u>						
			heme			Goals		
1st		1st L	Strength and Rigi earn about fund igidity of materia	amental concept of	of strength and	Under mater	stand the lials, and ca	basics of strength and rigidity of an explain some examples.
Semeste r	1st Quarter	2nd (Stress-strain rela Morishita)	tion and elastic molelastic moduli for a			xplain som noduli.	e types of elastic anisotropy and

		3rd	Particle dispersed about the theory or related to polycrys dispersed composi	on macroscòpic e stalline aggregate	elastić moduli	Can explain the r polycrystalline ag composite.			
			Anisotropy of vario (Morishita)	ous kinds of mate	erials	Can explain the	onginooring ann	dication on como	
			Ĝive a présentation application in an h anisotropic materia	eterogeneous m	e of engineering aterial and	kinds of heteroge		olication on some tropic materials.	
		5th	Introduction to cor Learn about concre construction), its c mechanical proper	ete (a typical ma constituent mate		Can explain concrete's constituent materials and mechanical properties.			
		6th	Durability, mainter for concrete struct Learn how to reinf how to deal with d durability.	ures (Takeda) orce concrete st	ructures, and	Can explain the maintenance and control techniques for concrete structures.			
		7th	technologies in the construction field				to deal with en w technologies		
		8th	Materials and envirus Learn about the restindustrial materials an LCA (Life Cycle	esults of analyzin s' environmental	g various ´ impact using	Can analyze the difference between various industrial materials by means of an LCA (Life Cycle Assessment).			
		9th	Study a material's Give a presentatio industrial material	n on the chàract		Can explain the applications, advantages, and disadvantages of an industrial material related special research.			
		10th	Study a material's Give a presentation industrial material materials.	n on the charact	eristics of an	Can explain the applications, advantages, and disadvantages of an industrial material related to special research.			
		11th	Study a material's Give a presentation industrial material	n on the charact	ishi) eristics of an	Can explain the a disadvantages of special research.		vantages, and naterial related to	
		12th	An outline of magr Outline the develo materials and their about specific case fields today.	pment history of r characteristics.	magnetic Also learn	Outline the devel materials and the explain the speci many fields today	eir characteristi fic cases that a	cs. Can also	
l I =	2nd Quarter	13th	Physical properties employed) Learn about the baphysical properties learned in the field use and application respective areas of understanding of t	asics of magnetis of magnetic ma d of electricity, et n cases of intere f specialty and d	sm and the aterials as cc. Investigate st in the	Learn about the basics of magnetism and the physical properties of magnetic materials as learned in the field of electricity, etc. Can investigate use and application cases of interest in the respective areas of specialty and deepen understanding of their principles.			
	14th 15th		Principles and appl sensors that use n employed) Introduce principle magnetic sensors i and also introduce intelligent magneti	nagnetic materia es and application that use magnet e intelligent mate	ls (Re- n examples of ic materials,	Can explain the principles and application examples of magnetic sensors that use magnetic materials, and explain intelligent materials and intelligent magnetic materials.			
			Applications exam _l employed) Compile into a rep investigation into r area of specialty.	ort the results of	f an	Can compile into a report and explain the results of an investigation into magnetic materials in one's own area of specialty.			
		16th	Final exam						
Evaluatio	n Meth	od and W	/eight (%)		T		<u> </u>		
	(1) Pre	esentation	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total	
6 1 1 1	25		0	0	0	0	0	25	
Subtotal			0	0	0	0	0	10	
Basic Proficiency	10		0		1				
Basic	10		0	0	0	0	0	10	

А	Akashi Co	ollege	Year	2024		Course Title	Information Processing		
Course	Informa	tion							
Course Co	ode	6011			Course Categor	y Speciali	zed / Elective		
Class For	mat	Lecture			Credits	Academ	ic Credit: 2		
Departme	ent	Mechani Enginee	ical and Electronic ring	c System	Student Grade Adv. 1st				
Term		First Sei			Classes per We	ek 2			
Textbook									
<u>reacning</u> Instructor	Materials	INOLIE	Kazunari,SUYAMA	 . Taikoi					
	Objectiv	•	Nazariari, 30 TAME	Taikei					
(1) Have (2) Under tools (D).	knowledge rstand the	e of the var characteris		s that a computer lats, and can convers in a way that is e			ate choices (H). d process them using appropriate		
Rubric									
			Ideal Level		Standard Level		Unacceptable Level		
Achievem	nent 1		Fully understated formats that cand their man protection.	computers handle,	Understand the that computers their managem protection.	handle, and	Do not understand the data formats that computers handle and their management and protection.		
Achievem	nent 2		Fully understa prepare techn documentatio presentation r various techni	nical n and materials, and	Understand how technical docum presentation m various techniq	nentation and aterials, and	Do not understand how to prepare technical documentation and presentation materials, and various techniques.		
Achievem	nent 3		Fully understa calculations an using Excel ar	nd processing	Understand sta calculations and using Excel and	processing	Do not understand statistical calculations and processing using Excel or ipyson.		
Assigne	ed Depar	tment Ol	bjectives						
Teachin	ng Metho	od							
Outline		create the includes	specialty. Improving the ability to sk for conveying technology. This nputers to material creation using n application technology and						
Style		will be t From we Office a	aught in a lecture eek 3 to week 15	e-style format. , lessons on creatir	ng technical docu	ımentation and	and protection in weeks 1 and 2 presentation materials using MS Il be taught in lecture-style and		
Notice		This cou guarant assignm take the	urse's content will eed in classes and ent reports. Sinc e course.	d the standard self	-study time requ quisite knowledg	ired for pre-stue required, stu	s include the learning time Idy / review, and completing dents from all departments can		
Charact	aristics	-	Division in Le		will flot be eligible	e ioi evaluatioi			
	Learning	or Class /	☑ Aided by I		☑ Applicable to	Remote Class	☐ Instructor Professionally Experienced		
	D1								
Course	Plan	1	I_,		Т	0 1			
		1	Theme	formata that ===	autoro bandi-	Goals	a data formate that committee		
		1st	and their charac	formats that comp teristics.	Juleis Hallüle		e data formats that computers ir characteristics.		
		2nd	Explain the inter networks of com	nal structure, stora puters.	age, and	networks of co	<u> </u>		
	3rd Explain styles, chapters, section fonts, and indents found in docu				paragraphs, ent creation.	paragraphs, fo creation.	les, chapters, sections, nts, and indents found in documer		
1st Quarter			and tables, and			pictures and ta	ste link and paste metafile for bles, and cross-reference.		
1st Quarter 5		5th	Create and subn Word	nit technical docum	ientation using	Create and sub Word	omit technical documentation using		
	Semeste r 6th		Create technical Describe how to templates, and s	ing PowerPoint. agrams,	Understand ho	al documentation using PowerPoint w to create different diagrams, slides / masters.			
	7			emplates, and slides / masters. xplain effective techniques and playback, icluding image, audio, and video data.			templates, and slides / masters. Understand effective techniques and playback, including image, audio, and video data.		
		7th	Explain effective including image,	techniques and pla	ayback, data.	including imag	ective techniques and playback, e, audio, and video data.		
		7th 8th	including image, Create technical	techniques and planting audio, and video of presentation documents	data.	including imag Create technic	e, audio, and video data. al presentation documentation		
		8th	including image, Create technical using PowerPoin	techniques and pla audio, and video of presentation docu t	data. mentation	including imag Create technic using PowerPo	e, audio, and video data. al presentation documentation int		
	2nd Quarter		including image, Create technical using PowerPoin Explain various f	techniques and planting audio, and video of presentation documents	data. mentation analysis.	including imag Create technic using PowerPo Understand va	e, audio, and video data. al presentation documentation		

	12th	Explain file pro	tection, encryp	otion, and security.	Can protec	Can protect, encrypt, and secure files.			
	13th	Explain a cloud development e	l-assisted inter nvironment.	active program		d a cloud-assisted nt environment.	I interactive program		
	14th	Explain databa execution.	se analysis tha	at used interactive	Understand interactive	d database analys execution.	sis that used		
	15th	Summary			Understand	d the summary.			
	16th	No final exam			No final ex	No final exam			
Evaluation I	Method and	l Weight (%)							
		Assignments	5				Total		
Subtotal	0	100	0	0	0	0	100		
Basic Proficiency	0	0	0	0	0	0	0		
Specialized Proficiency	0	100	0	0	0	0	100		
Cross Area Proficiency	0	0	0	0	0	0	0		

А	kashi Co	ollege	Year	2024		Course Title	Analytical Mechanics		
Course	Informa	tion							
Course Co	ode	6012			Course Category	/ Specializ	ed / Elective		
Class Forr	mat	Lecture			Credits	Academic Credit: 2			
Departme	ent	Mechanical Engineerin	and Electronic	System	Student Grade	e Adv. 1st			
Term		First Seme			Classes per Wee	ek 2			
Textbook						•			
Teaching		NAKANISH	I Hirochi						
Instructor	Objectiv	1	1 HIIOSIII						
(1) Under (2) Under	stand the	Lagrangian f	formulation methods of ana formulation (ca	lysis by Lagrangia nonical formulatio	n formulation.				
Rubric			•		,				
			Ideal Level		Standard Level		Unacceptable Level		
Achievem	ent 1		Fully understar formulation of mechanics.		Understand the Lagrangian med		Do not understand the formulation of Lagrangian mechanics.		
Achievem	ent 2			nd the methods _agrangian	Understand the analysis by Lagr formulation.		Do not understand the methods of analysis by Lagrangian formulation.		
Achievem	ent 3		Fully understar formulation of mechanics.		Understand the Hamiltonian me		Do not understand the formulation of Hamiltonian mechanics.		
Assigne	d Depar	tment Obje	ectives						
Teachin	g Metho	d							
Outline		useful and for each ob	powerfull in va pject to be hand analytic mechan	stigated mathematically. It is to consider a coordinate system s coordinate system will be. By escriptions with good prospects					
Style		The studer	d necessary sub ts are expected udents easy to	to solve the prac	rated through the ctice problems wi	eory lectures, fo th their own ha	ollowed by practice lectures. nds, and to explain their solutions		
Notice		This course guaranteed assignmen time, and s	rse's content will amount to 90 hours of study in to led in classes and the standard self-study time requent reports. Be aware that class time makes up a sign students are advised to thoroughly pre-study or rewho miss 1/5 or more of classes will not be eligible.			red for pre-studenall percentage eview.	dy / review, and completing of the overall expected learning		
Charact	orieties d	•							
☑ Active		DI CIASS / L	/ Division in Learning ☐ Aided by ICT ☑ Applicable t			Remote Class	☐ Instructor Professionally Experienced		
Course	Plan								
		Th	neme			Goals			
		1st Th	ne principle of le	east action		_earn the basic action.	s about the principle of least		
		2nd Ex	amples of Lagr	ange's equations	, I		e the examples of Lagrange's		
			ne principle of vinciple	irtual work and d	'Alembert's I	earn the basic	s about the principle of virtual mbert's principle.		
	1st	4th Ex	amples of Lagr	ange's equations		earn and solve	e the examples of Lagrange's		
	Quarter	5th Co	nservation law	S		•	s of conservation laws.		
		6th Ex	amples of cons	ervation laws			e the examples of conservation		
1st		7th In	tegration of the	e equations of mo	tion	Learn the basics of integration of the equations o motion.			
r	Semeste 8th		camples of integotion	gration of the equ	ations of		the examples of integration of the		
			nall oscilations			•	s of small oscilations.		
	10th		amples of smal	loscilations			the examples of small oscilations.		
	11th		otion of a rigid l	oody			s of motion of a rigid body.		
	2nd	12th Ex	amples of rigid	body motions		_earn and solve notions	the examples of rigid body		
	Quarter	13th Mo	otion in a non-i	nertial frame of re	oference I		s of motion in a non-inertial frame		
			ample of motio	n in a non-inertia	I frame of	earn and solven	the example of motion in a non- f reference.		
		h	anonical equati	ons			s of canonical equations.		

16th	Final exam									
Evaluation Method and Weight (%)										
	Examination	Exercise	Total							
Subtotal	80	20	100							
Basic Proficiency	0	0	0							
Specialized Proficiency	80	20	100							
Cross Area Proficiency	0	0	0							

А	kashi Co	ollege	Year	2024		Cou		Inclusive Design
Course	Informa	tion						
Course Co		6013			Course Categor	<i></i>		red / Elective
Class For	mat	Lecture	!! =!:	- Contain	Credits	Ac	Academic Credit: 2	
Departme	ent	Engineer	cal and Electronic ring	c System	Student Grade	Ad	v. 1st	
Term		First Sen			Classes per We		0: 0 =	
Textbook Teaching		『インク <i>.</i> クス ユー	ルーシブデザイン ·ザー情報集・事例	ハンドブック』、Ÿ 集』、国際ユニバ−	₽井康之編著、財団 −サルデザイン協議	法人たんほ 会編、『I	まぼの 【 CF』	家、2006年』、『IAUD UDマトリッ 厚労省資料他
Instructor				A Naoki,OKAMURA				
	Objectiv							
(2)ユ-	-ザー参加型	型手法につい	インクルーシブデ ての理解 を包括的に援助す	ザインの理解 るための、確かな知	識と実践力及び人	間性の涵養	を目標	 とする。
Rubric					_			
			理想的な到達レ		標準的な到達レイ			未到達レベルの目安
評価項目1			イングルーシブ 十分理解し説明	ブザインについて 1できる	インクルーシブラ 理解し説明できる	rサインに [*] る	ついて	インクルーシブデザインについて 理解し、説明できない。
評価項目2			複数の知識を十 一つでなく複数 できる。	-分に応用し、解が のアイデアを提示	複数の知識を応用なく複数のアイラ	月し、解が [.] デアを提示 ⁻	一つで できる	複数の知識を応用し、解が一つで なく複数のアイデアを提示できな い。
評価項目3			多様なユーザー し、説明できる	-特性を十分に理解 5	多様なユーザー特 できる。	持性を理解	し説明	多様なユーザー特性を理解し、説 明できない。
		tment Ob	jectives					
Teachin	ig Metho	1		1 / 1		-		* * * * * * * * * * * * * * * * * * * *
Outline	インクルーシブデザインとはこれまで除外されて来た(エクスクルード)ユーザーを包含し(インクルートジネスとして成り立つメインストリームのデザイン開発を目的とした考え方で、特に最近では、UX(ユーザイノベーションの有効な手法としても注目されている。本論では、具体的な医療・福祉分野等での事例研究をヨーロッパにおけるインクルーシブデザイン、日本におけるインクルーシブデザイン、およびそのプロセスでザー参加型手法について、WSなどを交えながら理解することを目標とする。岩田は、28年間デザイナーとし村は、25年間、バリアフリー建築を専門とする1級建築士として建築設計事務所を主宰。これらの経験を活たうものである。							に最近では、UX(ユーザー体験)、 福祉分野等での事例研究を題材に、 ン、およびそのプロセスであるユー は、28年間デザイナーとして従事、岡
Style		授業は、 要な資料 (学芸出	は講義で適宜配布	義形式とワークショ する。参考図書:平	ップ等の演習方式 [*] 井他「インクルー [*]	で対面およ シブデザイ	びオン ン: 社	・ラインによっておこなう。授業に必 会の課題を解決する参加型デザイン」
Notice		90時間に	相当する学習内容 ある。 象としない欠席条	である。出身学科を	と問わず、できるだ	け平易に授	経業し、	に標準的な自己学習時間の総計が、 グループによるワークショップも行 な塚)とオンライン(外部講師)を併
Charact	eristics	of Class /	Division in Le	earning				
☑ Active	Learning		☑ Aided by I	СТ	☑ Applicable to	Remote	Class	☐ Instructor Professionally Experienced
Course	Plan							
			Theme			Goals		
)世界のアクセイ までのデザインと のか?なぜその必	ザインとは何か?① シブルデザインを理 インクルーシブデサ 要性があるのかにつ っしょに考えていく	[解する。」これ デインは何が違う Oいて具体的な事	世界のアク ニバーサル	フセイミレデザイ	シブルデザイン、バリアフリーからユ インを理解する。
			インクルーシブデ 塚)	ザインとは何か?②) (外部講師、大			
		2nd	インクルーシブデ ザインやバリアフ	ザインの成立背景や リーなど類似の概念 での具体的な事例を 。	えとの相違点につ	インクルー	ーシブラ	デザインの概念・方法論を理解する。
		3rd		こよる校内バリフリ 具を用いて、明石高		高齢者、視 一の特製を		害者などの疑似体験によって各ユーザ する。
1st Semeste r	1st Quarter	4th	、大塚) 企業では経営理念 っている。企業経	ンクルーシブデザィ やビジョンに基づい 営とモノづくりの関 を考えながら企業で て考える。	 て商品開発を行 ほや市場との関	オフィス空 とにユーち	空間では	Dインクルーシブデザインの実例をも ナーチの方法を学ぶ。
		5th	、大塚) オフィスとは何か があり、どのよう て、オフィスを計	ンクルーシブデザィ 、オフィス空間にに なプロダクトが存在 画し、空間をデザィ ないのかを考える。	↓ はどのような機能 Fするのか。そし			Dインクルーシブデザインを当事者と とができる。
		6th	、大塚) オフィスで使うプ が、それらの商品	ンクルーシブデザィ ロダクトには文具や がどのような考えた いるのかを事例を基	o家具などがある 5、プロセスを経	オフィス空 理解する。 	2間での	Dインクルーシブデザインプロセスを

7t	th 営	大塚) 段勉強している教	室や学校空間で気	づいたことを出	社会課題を行動観察 きる。	察によって設定でる	き、課題解決がで
8t	チブ th 社	ームメイド・デザ リス)) 会で実際に実践し の事例を紹介しな	イン1 (岩田直樹 ている「チームメ- がら、実際に体験:	(アトリエ・カ イド・デザイン をする。「グラ	参加と共創のデザイ	インについて、理解	解する。
9t	チ チ た と た を	ームメイド・デザームメイド・デザイン・ ームメイド・デザイ学生による学科経 おこなう。実際に	イン2 (岩田)、大 インによる「グラ」 3介パンフレット・	塚 フィックデザイ DVD)」の実践			ィックデザイン
10	高 イ Oth 環	齢者・障害者の住 (ス)、大塚 (齢者・障害者の住 境整備のポイント	環境について、各別を実践事例から考	、 疾患ケースの住	バリアフリーと住り 環境整備の基礎を5	景境の基礎及び重望 里解する。	要性を認識し、住
1:	- "	察して、身体に障	害を持つ人の生活	を包括的に捉え	インクルーシブなん。	バリアフリー住宅警	整備の基礎を学ぶ
2nd 12th		。 が国の当事者参画 」、兵庫県福祉の ちづくりアドバイ	の「ユーザーエキ <i>」</i> まちづくり条例に	スパートシステ おける「福祉の		おける福祉のまちて	づくりについて理
13	ا ع ع ع	大塚) アスピレーション 」というテーマで 、ワークショップ	のデザイン : デザ [.]	インができるこ			イン手法によって
14	4th し	大塚) 『ロセスにおいて、. 『可視化を行う。ユ 『中から得られた気』	ニーズの中から重! ーザーとの直接の	要な課題を抽出やりとりや観察	社会課題を抽出・! う。	リサーチし可視化し	ン、課題解決を行
15	5th ((外部講師・大塚)					デザインによる解
1							
		Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
0		0	0	0	0	0	0
0		0	0	0	0	0	0
0		0	0	0	0	0	0
0		0	0	0	0	0	0
		7th 音し定 子 元社 7th 音し定 子 元社 7th 10th 10th 11th 12th 13th 15th 16th 16th	Ath	大塚	7th 普段勉強している教室や学校空間で気づいたことを出し合って、グループでディスカッションし、課題を設定。そしてアイデアを出し合う。	大塚 一切	大塚

А	kashi Co	ollege	Year	2024		Course Title	Off-Campus Practical Training	
Course	Informa	tion	·	•				
Course Co	ode	6014			Course Category	/ Specializ	zed / Compulsory	
Class Forr	mat	Practical	training		Credits	School (Credit: 2	
Departme	ent	Mechani Engineei	cal and Electronic	c System	Student Grade Adv. 1st			
Term		Year-rou			Classes per Wee	ek 前期:2 名	ら と は は は は は は は は は は は は は は は は は は	
Textbook	and/or	1001100			Tolusces per Tree	13379312 12	0.0112	
Teaching								
Instructor		,						
(1) Can e	Objectiv experience	some of the	e actual technica	I activities at the h	ost companies an	d work on solv	ving problems with the necessary	
assistance (2) Can w	e. vork collab	oratively in	the assigned wo	orkplaces and thinked empirically.	freely.			
Rubric	ероп епес	Lively Wilat	. Has been learne	ed empirically.				
			Ideal Level		Standard Level		Unacceptable Level	
Achievement 1 actual technical activities at the host companies and actively work on solving problems with with solving problems with the actual technical activities at the host companies and work on solving problems with the solving problems with the actual technical activities at the host companies and work on solving problems with the solving problems							Cannot experience some of the actual technical activities at the host companies and work on solving problems with the necessary assistance.	
Achievem	Can work collaboratively in the assigned workplace and actively think freely. Can work collaboratively in the assigned workplace and think freely. Can work collaboratively in the assigned workplace and think freely. Can work collaboratively in the assigned workplace and think freely.							
Achievem	ent 3		Can effectivel appropriately been learned	eport what han pirically.	Cannot effectively report what has been learned empirically.			
Assigne	d Depar	tment Ob	ojectives					
Teachin	ig Metho		rse is set un as r	part of an introduct	ion for an interns	hin and sandw	ich system. The aim is to gain a	
Outline		sense of	practical techno	logy through techn from technical exp	iical experience in	companies or	government agencies, etc., and to	
Style		Follow th	ne host company	instructor's instru	ctions.			
department principal or with the faculty of basic engineering research or special research. During the internship period, students should actively try to acquire technical and other skills, and dress and us language that is appropriate for an intern. The internship period shall be at least 10 working days of summer holidays, etc. The graduate study internship may include up to 15 hours of preliminary gui (manner lesson, preliminary research on the host company), debrief sessions, and time for preparir with a total of 90 hours. If it is determined that conducting the internship at a company or other institution will be difficult of things like social circumstances, and if it is necessary to provide reasonable consideration for studer internship will be replaced with research on companies, etc., related to the field of graduate study. case, the evaluation will consist of an evaluation by research advisers for students' research on cometc. (30%), the research report (30%), and outcomes debrief session results (40%). In the Course and Aims and the Rubric Evaluation items, the following items should be replaced as follows: (1) "Experience some of the actual technical activities at the host companies, etc." as "conduct resestudy using the specified methods of the companies, etc., of research target and to obtain advice from members or supervising faculty member of research there." (2) "Work collaboratively in the assigned workplace" as "contribute to the activities of company of tresearch." (3) "What has been learned empirically" as "one's own research result."						er skills, and dress and use least 10 working days during the hours of preliminary guidance ins, and time for preparing reports, titution will be difficult due to consideration for students, the field of graduate study. In that sudents' research on companies, its (40%). In the Course Objectives placed as follows: es, etc." as "conduct research and et and to obtain advice from the		
Charact	eristics	of Class /	Division in Le	earning				
☑ Active	Learning		☐ Aided by I	СТ	☑ Applicable to	Remote Class	☐ Instructor Professionally Experienced	
	DI							
Course	Plan 		Th		Τ.			
		Theme Goals 1st Guidance Reminders about precautions of internship						
		2nd	Internship		(Get individual t	e host company, etc. echnical experience at the host	
1st Quarter 4th 5th			Same as above			company. Same as above	<u> </u>	
		4th	Same as above		9	Same as above	9	
			Same as above			Same as above		
1st Semeste		Same as above		9	Same as above			
		Same as above		S	Same as above	2		
			Same as above			Same as above	2	
			Same as above		9	Same as above	2	
	2nd		Same as above			Same as above		
	Quarter		Same as above			Same as above		
			Same as above					
12th 13th			Same as above		10	Same as above Same as above		

		14th	Same as above			Same as above			
		15th	Same as above			Same as above			
		16th	No final exam						
		1st	Same as above			Same as above			
		2nd	Same as above			Same as above			
		3rd	Same as above			Same as above			
	3rd	4th	Same as above			Same as above			
	Quarter	5th	Same as above			Same as above			
		6th	Same as above			Same as above			
		7th	Same as above			Same as above			
2nd		8th	Same as above		Same as above				
Semeste		9th	Same as above			Same as above			
		10th	Same as above			Same as above			
		11th	Same as above			Same as above			
	4th	12th	Same as above			Same as above			
	Quarter	13th	Same as above			Same as above			
		14th	Same as above			Same as above			
		15th	Internship debrief ses	sion		A presentation on the internship .	A presentation on the overall outcomes of the internship .		
		16th	No final exam						
Evaluat	ion Meth	od an	d Weight (%)						
			Evaluation of the training destination	Report		Debriefing session	Total		
Subtotal		:	30	30		40	100		
Basic Prof	ficiency	(0	0		0	0		
Specialize	ed Proficier	ncy :	30	30		40	100		
Cross Are	a Proficier	псу	0	0		0	0		

А	kashi Co	ollege	Year	2024		Course Title	Preliminary Research Studies	
Course	Informa	tion	·	·				
Course Co	ode	6015			Course Category	y Speciali	zed / Compulsory	
Class Forr	mat	Seminar			Credits	School Credit: 4		
Departme	ent	Mechani Engineei	cal and Electroni ring	c System	Student Grade	Grade Adv. 1st		
Term		Year-rou			Classes per Wee	ek 4		
Textbook								
Teaching Instructor								
	Objectiv	es						
(1) Can ir perspectiv (2) Can si (3) Can e	ntegrate a	nd deepen o	expertise, and ex blems. esearch results a I research indepe	camine it theoretically s reports and poste endently and contin	ally, systematicall ers, communicate nuously.	y, practically, ethem verbally	and creatively from a wide to others, and discuss them.	
Rubric			T		Ι			
			Ideal Level		Standard Level		Unacceptable Level	
Achievem	ent 1		Can integrate expertise, and theoretically, practically, and wide perspessolving proble	d examine it systematically, ad creatively from ective toward	Can integrate an expertise, and e theoretically, sy and practically f perspective tow problems.	examine it stematically, from a wide	Cannot integrate and deepen expertise, and examine it theoretically, systematically, and practically from a wide perspective toward solving problems.	
Achievem	Can fully summarize obtained research results as reports and posters, communicate them verbally in a comprehensible manner to others, and discuss them.					obtained as reports and inicate them rs, and discuss	posters, communicate them	
Achievem	Can fully engage in I research independer continuously.				Can engage in le research indepe continuously.	earning and Indently and	Cannot engage in learning and research independently and continuously.	
Assigne	d Depar	tment Ob	ojectives					
Teachin	g Metho	od						
Outline		and elec	tronic system en The aim is to acc	gineering fields at	a higher level und	der the superv	nduct research in the mechanical ision of the faculty member in oundation for graduate study's	
Style		In the commember decided exploring	ourse, as it is par s in charge will f after discussing g the issues give s will carry out ea	irst present planne with students with n, thinking about t	d themes for sett utmost respect to he approach metl	ing up a resea o their enginee hods, right up	esearch voluntarily, the faculty rch theme. The theme will then be ering interests. Furthermore, from to answering the questions, their own judgment as much as	
Notice		This cou guarante assignm cultivate passing	eed in classes an ent reports. Pror d in the departm	l amount to 180 ho d the standard self note research inde nent. Other condition	ours of study in to -study time requi pendently and ac ons for missing cl	otal. These hou ired for pre-stu tively based on asses that will	rs include the learning time udy / review, and completing n the background knowledge make students ineligible for a	
Charact	eristics		Division in L	earning				
☑ Active			☐ Aided by I		☑ Applicable to	Remote Class	☐ Instructor Professionally Experienced	
Course	Dlan							
Course	riaN 		Theme		Ι,	Goals		
		1st	Setting the rese	mber in charge wil	Lovelain and		research themes independently aching staff.	
	Individual research 2nd Carry out separately under superv faculty member in charge.				sion of each	Can independe studies and res	ently and continuously conduct search under each teaching staff.	
3rd		faculty member in charge. Individual research Same as above			Same as above			
1st	1st Quarter	4th	Individual research Same as above			Same as above	2	
Semeste r 5th		Same as above Individual research Same as above			Same as above	2		
6th		6th	Individual resear Same as above	rch		Same as above		
		7th	Individual resear Same as above	rch		Same as above	2	
8th			Individual resea Same as above	rch		Same as above		
	2nd Quarter	9th	Individual resea Same as above	rch	!	Same as above	2	

10th											
1111			10th		rch		Same as abov	e			
13th			11th		rch		Same as abov	e			
14th			12th		rch		Same as abov	Same as above			
15th			13th		rch		Same as abov	e			
15th Same as above Same as above 1st No final exam			14th		rch		Same as abov	e			
1st Individual research Same as above			15th		rch		Same as abov	e			
Same as above Same as abov			16th	No final exam							
Same as above Same as abov			1st		rch		Same as abov	e			
Ath Quarter Same as above		2nd		Individual resea	rch		Same as abov	e			
Ath Quarter Same as above		3rd		Individual resea	rch		Same as abov	e			
Quarter Same as above Sam		4th		Individual resea	rch		Same as abov	e			
Same as above Same as abov		Quarter 5th		Individual resea	rch		Same as abov	e			
Tth		6th		Individual resea	rch		Same as abov	e			
Same as above Same as above		7th		Individual resea	rch		Same as abov	e			
Semeste r 9th Individual research Same as above 10th Individual research Same as above 11th Individual research Same as above 12th Individual research Same as above 12th Individual research Same as above 13th Individual research Same as above 14th Individual research Same as above 15th Presentation review meeting 15th Presentation review meeting 16th No final exam Evaluation Method and Weight (%) Examination Presentation Report Autonomy Portfolio Other Total Subtotal 0 30 40 30 0 0 0 100 Basic 0 10 30 40 30 0 0 0 100		and 8th		Individual resea	rch		Same as abov	e			
10th Individual research Same as above Same as above 11th Individual research Same as above 12th Individual research Same as above 12th Individual research Same as above 13th Individual research Same as above 13th Individual research Same as above 14th Individual research Same as above 14th Individual research Same as above 15th Presentation review meeting Can summarize obtained research results reports and posters, communicate them v to others, and discuss them. 16th No final exam Evaluation Method and Weight (%) Examination Presentation Report Autonomy Portfolio Other Total Subtotal 0 30 40 30 0 0 100 Basic 0 10 30 40 30 0 0 100 Basic 0 10 10 0 100 Can summarize obtained research results reports and posters, communicate them v to others, and discuss them.			9th	Individual resea				e			
Same as above Same as abov			10th	Individual research			Same as above				
Ath Quarter 13th Same as above Same as			11th		Individual research			Same as above			
Quarter 13th Individual research Same as above Same as above 14th Individual research Same as above Same as above 15th Presentation review meeting Can summarize obtained research results reports and posters, communicate them v to others, and discuss them. 16th No final exam Evaluation Method and Weight (%) Examination Presentation Report Autonomy Portfolio Other Total Subtotal 0 30 40 30 0 0 100 Basic 0 10 30 10 0 40		4th	12th		rch		Same as above				
Same as above Same as above Same as above		_	13th		rch		Same as above				
15th Presentation review meeting reports and posters, communicate them v to others, and discuss them.			14th		rch		Same as above				
Evaluation Method and Weight (%) Examination Presentation Report Autonomy Portfolio Other Total Subtotal 0 30 40 30 0 0 100 Basic 0 10 20 10 10 0 40		15th		Presentation rev	view meeting		Can summarize obtained research results as reports and posters, communicate them verbally to others, and discuss them.				
Evaluation Method and Weight (%) Examination Presentation Report Autonomy Portfolio Other Total Subtotal 0 30 40 30 0 0 100 Basic 0 10 30 10 0 0 100		16th		No final exam							
Examination Presentation Report Autonomy Portfolio Other Total Subtotal 0 30 40 30 0 0 100 Basic 0 10 20 10 0 0 100	Evaluati						•				
Subtotal 0 30 40 30 0 0 100 Basic 0 10 20 10 0 0 40	Lvaluati				Poport	Autonomy	Portfolio	Othor	Total		
	Subtotal										
		y 0		10	20	10	0	0	40		
Specialized Proficiency 0 20 20 20 0 0 0	Specialize Proficienc	ed y 0		20	20	20	0	0	60		
Cross Area Proficiency 0 0 0 0 0 0 0				0	0	0	0	0	0		

А	kashi Co	ollege	Ye	ar	2024			Course Title	System Control Engineering
Course	Informa	tion	.		1				3
Course Co	ode	6016				Course Categor	ry	Specializ	ed / Elective
Class Forr	mat	Lecture				Credits		Academi	c Credit: 2
Departme	ent	Mechani Engineei	cal and Elec	tronic	System	Student Grade		Adv. 1st	
Term		First Ser				Classes per We	ek	2	
Textbook Teaching									
Instructor		KAMI Ya	sushi						
	Objectiv		343111						
1. Can de 2. Can de 3. Can ca 4. Can ca 5. Can ex 6. Can ex	rive the st termine th lculate sta lculate obs plain conti	rate-space in stability of the stability	c gains to ac s to achieve ance that ca	me-in thieve the s an be	nvariant system us the specified pole pecified pole posit achieved (adjuste onditions of the co	e position through ion through conv d) using an opting	h conv version mal re	version to n to a obse gulator	a controllable canonical form ervable canonical form
Rubric			I			la			
			Ideal Lev		state chace	Standard Level		cnaco	Unacceptable Level
Achievem	Can derive the state-space representation for any linear time-invariant system Can derive the state-space representation for some typical system examples						Do not know the definition of the state-space representation		
Achievem	ent 2		based or procedur	the c e in L	e the stability determination yapunov's nination method	Can explain the procedure in Ly stability determ	/apun	ov's	Do not know Lyapunov's stability determination method
Achievem	ent 3		feedback	gains	the desired state s by converting to canonical form	Can explain the stabilized in stacontrol	matrate fee	rix to be edback	Do not know the state feedback control rule
			observer	calculate the desired rver gains by converting to servable canonical form Can explain the matrix to be stabilized in the observer design				Do not know the observer	
			performa	ance to ved w	e control radeoffs that can ith an optimal	Can explain the performance the achieved with a regulator	nat car	n be	Do not know the optimal regulator
			condition	s bas	e stability ed on the f the aggregation	Can explain the characteristics of the composition of the aggregation system's poles			Do not know the characteristics of the composition of the aggregation system's poles
Assigne	d Depar	tment Ob		, ,					
	g Metho								
Outline		for which	n a control s te-space rep to design a	systen oreser	n is designed in th ntation that use va	e frequency don Iriables (state va	nain. I riable	By contrast s) that rep	output relationships is the basis , modern control theory is based resent the internal state of a the basic contents of modern
Style		method,	controllabil t every clas	ity an	d observability, ar	nd how to design	state	feedback	vapunov's stability determination controllers and observers. be exercises to review the
This course's content will amount to 90 hours of study in total. These hours include guaranteed in classes and the standard self-study time required for pre-study / reviews assignment reports. Furthermore, the course assumes that students have a basic known Laplace transform, transfer functions, and eigenvalues and matrix inversion (the ver Students who miss 1/3 or more of classes will not be eligible for a passing grade.				dy / review, and completing basic knowledge of topics such as (the very basics of matrix theory.					
Charact	eristics	of Class /	Division	in Le	earning				
☑ Active	Learning		□ Aideo	by IC	СТ	☑ Applicable to	o Rem	note Class	☐ Instructor Professionally Experienced
Course	Plan								
			Theme				Goals	<u> </u>	
1st I			Introduction				cours Can ι	se understand	an outline and objectives of this differences between the classical nd modern control theory
1st Semeste Quarter 2nd An introd			An introduc	ntroduction to state-space representation			repre Can e	sentation	xpression for state-space process for deriving a state-space
		3rd	Solutions fo	or equ	ations of state		Can e matri	explain the	solution for an equation of state meaning of a state-transition state-transition matrix

		4th	Relationship betw transfer function,	een an equation and the stability	of state and a condition	space matrix Can explain the	e stable condit	tion from the state- ions of a system e representation		
		5th	Similarity convers	sion invariants an	d transfer	transformation Can similarly tr	Can explain the formula for a similarity transformation Can similarly transform states using the given similarity transformation matrix			
		6th	Concept of stabili	ty		Can explain the convergence va	e relationship lalues of state	between stability and variables		
		7th	Lyapunov's stabil	Lyapunov's stability determination method (1)			apunov's stabi	lity determination		
	8th Lyapund			ity determination	method (2)	linvariant system	m given by a s , based on Lya	of the linear time- state-space apunov's stability		
	9th St		State feedback ar	nd controllability		Can explain sta Can determine conditions		ontrol rules based on control		
	10th th		The nature of a co		ical form and	matrix in contr correspondence Can calculate t	ollable canonic e with a transf he state feedb	cs of the system cal form and their fer function lock gain that osition through canonical form		
			Observers and ob	servability			configuration observability	n of an observer		
	2nd Quarter	12th	The nature of obs		l form and the	matrix in obser	vable canonice with a transfobserver gain to oosition throuce	cs of the system al form and the fer function that achieves the gh conversion to a		
		13th	State feedback coinstruments (agg		observation	Can explain the composition of the aggregation system's poles Can explain the stability conditions of the aggregation system				
			Pole-zero offset, odual system	controllability / ob	oservability, a	Can explain the relationship between pole-zero offset and the establishing controllability and observability Can explain a construction and properties of a dual system				
	15th		Optimal regulator	Optimal regulators, and the Kalman filter			Can explain the control implications for optimal regulators and the Kalman filter			
Evaluati	16th Evaluation Method and		Woight (0/)							
<u> Lvaiuali</u>	Report		Exercise	Mutual Evaluations between students	Behavior	Portfolio	Other	Total		
Subtotal			20	0	0	0	0	100		
Basic Proficiency	, 0		0	0	0	0	0	0		
Specialized Proficiency	d gr)	20	0	0	0	0	100		
	Cross Area			0	0	0	0	0		

<i>F</i>	Akashi Co	ollege	Year	2024			Advanced Instrumentation Engineering			
Course	Informa	tion								
Course C	ode	6017			Course Categor	y Specialize	ed / Elective			
Class For	mat	Lecture			Credits	Academic	Credit: 2			
Departme	ent	Mechanica Engineerin	l and Electronic g	System	Student Grade	Adv. 1st				
Term		First Seme	ester Classes per Wee			ek 2				
Textbook Teaching	and/or Materials	前田、木村	、押田:「計測工学	学」、コロナ社						
Instructo	r	SHI Fengh	hui							
Course	Objectiv	es								
(1) 計測ラ (2) 計測シ	データの処理 システムの解	て総合的に理解 2 (単位と標準、 3析と特性評価 2 (基本原理とも	統計的データ処 (システム評価法	戦を適切に応用できる 理) 、ディジタル信号処	ることを達成度目 理)	標とする。				
Rubric										
			理想的な到達レイ	ベルの目安	標準的な到達レイ	ベルの目安	未到達レベルの目安			
評価項目1	L		計測データの処理 計的データ処理) 用できる。	理 (単位と標準、統 について理解し応	計測データの処理 計的データ処理) る。	里 (単位と標準、紹 について理解でき	記計測データの処理 (単位と標準、統計的データ処理)について理解できない。			
評価項目2	2			解析と特性評価 (シ ディジタル信号処 し応用できる。	計測システムの所 ステム評価法、デ 理)について理解	解析と特性評価 (シ ディジタル信号処 できる	・計測システムの解析と特性評価 (シ ステム評価法、ディジタル信号処 理)について理解できない。			
評価項目3	3		各種基本計測原理	理 (基本原理とその 関 (基本原理とその) 関 し応用できる。		理 (基本原理とそ	各種基本計測原理 (基本原理とその応用)について理解できない。			
Assigned Department Ob				:n+U/IU/II (Cる。	ONDMIC JOIC	生はている。	ツバル円 ハピ ンV・し、土が干 しさんひい。			
	ng Metho		ECUVES .							
Outline	ig Metric	最近の著し 中でのオン 1)各種応用 ついて簡単	ライン計測やイン 計測に共通な基礎 に総括復習したの	/プロセス計測の必要 事項 (計測工学とに	要性がますます高 は、単位と標準、記	まっている。本講 計測データ処理、記	タによる計測の自動化や生産体系の 養では、 十測系の特性とシステム解析など) に			
Style			より授業を進める。							
Notice		90時間に相	当する学習内容で	望時間と、予習・復 である。 - (割合) 1/3以上の		ート作成に必要な	票準的な自己学習時間の総計が、			
Charact	teristics (of Class / D	Division in Lea	arning						
□ Active	e Learning		☑ Aided by IC							
			M Alded by IC	Т	☑ Applicable to	o Remote Class	☐ Instructor Professionally Experienced			
Course	D.		M Alded by IC	Т	☑ Applicable to	o Remote Class				
	Plan		,	Т	☑ Applicable to					
220.00	Plan	+	neme	T	☑ Applicable to	o Remote Class Goals				
	Plan	総 1st 計	neme 論 測工学とは何か?	計測、測定、計量な	.,	Goals				
	Plan	1st 総計 と 計単 2nd つ	neme 論 測工学とは何か? 計測の目的につい 測の基礎 位と標準について いて知識の定着を	計測、測定、計量な	さどの工学的意味 位や次元解析に 内手法と計測シ	Goals 計測工学とは何か	Experienced			
	Plan	1st 結計 と 2nd つ ス。 計 3rd 測	neme 論 測工学とは何か? 計測の目的につい 測の基礎 位と標準について知識の定着を テム計画について 測データの誤差と 定誤差と測定精度	計測、測定、計量な いて考察する。 「考察し、SI 基本単 で図る。測定の基本的 「考察し、計測の目的	どの工学的意味 位や次元解析に 対手法と計測シ 内を明確にする 関差の要因を明	Goals 計測工学とは何か 単位と標準につい ついて理解する。	Experienced 、その基本概念について理解する。			
	Plan 1st Quarter	1st 総計と 計単つス。 3rd 別測ら 4th 測測	neme 論 測工学とは何か? 計測の基礎 位いて知計画について がである。 ができます。 神では、 ができます。 神ででは、 ができます。 神ででは、 は、 は、 は、 は、 は、 は、 は、 は、 は、	計測、測定、計量な ハて考察する。 で考察し、SI 基本単 で考察し、別定の基本的 で考察し、計測の目的 で で で で で で で で で で で で で	だの工学的意味 位や次元解析に り手法と計測シ 内を明確にする 以差の要因を明 て考察する。	Goals 計測工学とは何か 単位と標準につい ついて理解する。 測定誤差と測定精。	Experienced 、その基本概念について理解する。 て考察し、SI 基本単位や次元解析に			
1st Semeste r	1st	1st 総計と 計単つス。 3rd 別測で 4th 計計	neme 油 油 油 油 油 一 神 神 神 神 神 神 神 神 神 神 神 神 神	計測、測定、計量ないて考察する。 「考察し、SI 基本単位図る。測定の基本にである。測定の基本にできない、計測の目的でで表際し、計算を関係である。 と精度では、表別の理では、できないである。	どの工学的意味 位や次元解析に り手法と計測シ 内を明確にする 呉差の要因を明 て考察する。 ン、例題を通じ	Goals 計測工学とは何か 単位と標準につい ついて理解する。 測定誤差と測定精。	Experienced			
1st Semeste	1st	1st 総計と 2nd ス。 3rd 計測ら 4th 計計基 機	eme 論 測工学とは何か? 計測の基礎について がった。 調性についてをでいて対している。 神ではいったではいった。 神ではいる。 神ではいる。 はいる。 はいる。 はいなな。 はいなななななななな。 はいなななななななななななななななななななななななななななななななななななな	計測、測定、計量ないて考察する。 に考察する。 に考察する。 に考察し、SI 基本単位図る。測定の基本にで考察し、計測の目的にで考察し、に対理について考察した。 対処理について考察に対して表際を対した。 に対して表際に対して表際には、 に対して表際に対して表際には、 に対して表際に対して表際には、 に対して表際に対して表際に対して表際には、 に対して表際に対して表際に対して表際に対して表際に対して表際に対して表際に対して表際に対して表際に対して表際に対して表際に対して表際に対して表際に対して表際に対して表別に対象を表別に対象を表別に対して表別に対しで表別に対して表別に対して表別に対して表別に対して表別に対しまするとまするのでは表別に対しまするのでは表別に対しまするのではまするのではなりではまするのではまするのではなりではなりまする	などの工学的意味 位や次元解析に 付手法と計測シ 内を明確にする 以差の要因を明 て考察する。 し、例題を通じ ついて考察し、	Goals 計測工学とは何か 単位と標準につい ついて理解する。 測定誤差と測定精。 測定データの統計 計測システムの基。	Experienced			
1st Semeste	1st	1st 総計と 計単つス。 計測の 割測で計計基機機。 その機弾	eme 論測工学とは何に 学と目のでした。 神川別をないった。 神川別の基標準ではいった。 神川のとない。 神川のとない。 神川のとない。 神川のとない。 神川のとない。 神川のとない。 神川のとない。 神川のでででいい。 神川ののでは、 神川ののでは、 神川ののでは、 神川ののでは、 神川ののでは、 神川ののでは、 神川ののでは、 神川ののでは、 神川ののでは、 神川ののでは、 神川ののでは、 神川ののでは、 神川ののでは、 神川ののでは、 神川のでは、 神川のでは、 神川のでは、 神川のでは、 神川ののでは、 神川ののでは、 神川ののでは、 神川ののでは、 神川ののでは、 神川ののでは、 神川ののでは、 神川ののでは、 神川ののでは、 神川ののでは、 神川ののでは、 神川ののでは、 神川ののでは、 神川ののでは、 神川のでは、 神田の	計測、測定、計量ないて考察する。 「考察する。」 「考察する。」 「考察し、測定の基本はで、対象のでは、計測の目的でで、対象のでは、計算のでは、では、対象のでは、ないのでは、対象のでは、ないのでは、ないのでは、ないのでは、ないのでは、ないのでは、ないのでは、	などの工学的意味 位や次元解析に 対手法と計測シ 内を明確にする 以差の要因を明 て考察する。 し、例題を通じ ついて考察し、	Goals 計測工学とは何か 単位と標準につい ついて理解する。 測定誤差と測定精 。 測定データの統計 計測システムの基 。 機械的拡大原理(Experienced Experienced Experienced . その基本概念について理解する。			
1st Semeste	1st	1st 総計と計単つス。 3rd 別測で計計基機機。 6th 機弾定機	eme 論測計測のとは的でしている。 がつしている。 がつしている。 がつしている。 がつしている。 がつしている。 がつしている。 がっしている。 がっしている。 にででいる。 がいている。 にでいる。 がいている。 がいている。 にでいる。 にている。 に	計測、測定、計量ないて考察する。 「考察する。」 「考察する。」 「考察し、測定の基本はで、対象のでは、計測の目的でで、対象のでは、計算のでは、では、対象のでは、ないのでは、対象のでは、ないのでは、ないのでは、ないのでは、ないのでは、ないのでは、ないのでは、	などの工学的意味 位や次元解析に 対き明確にする 以差の要因を明 て考察する。 し、例題を通じ ついて考察する 系による振動測	Goals 計測工学とは何か 単位と標準につい ついて理解する。 測定誤差と測定精 ・ 測定データの統計 計測システムの基 ・ 機械的拡大原理(・ ・ 弾性変形のセンサ 定について理解す	Experienced Experienced Experienced . その基本概念について理解する。			
1st Semeste	1st	1st 総計と計単つス。 計単つス。計削ら 測測て 計計基 機機。 機弾定 機ジ 電イ 9th	eme 論測計測のという。 神にないた。 神には、 ・ 神には、 ・ 神には、 ・ は、 は、 は、 は、 は、 は、 は、 は、 は、 は、	計測、測定、計量ないて考察する。 「考察する。」 「考察する。」 「考察する。」 「考察し、測定の基本的である。」 「特度のできた。」 「特度のでは、できた。」 「対象の地理にして、できた。」 「対象の地理にして、できた。」 「対象のでは、できた。」 「は、大のでは、大のでは、大きには、大きには、大きには、大きには、大きには、大きには、大きには、大きに	などの工学的意味 位や次元解析に対する 性が大きいではいまする。 以きをの要する。 以きを変する。 し、のいて考察する。 いて考察する。 による振動則 する。 による。 による。 による。 による。	Goals 計測工学とは何か 単位と標準につい で理解する。 測定誤差と測定精 ・ 測定データの統計 計測システムの基 ・ 機械的拡大原理(・ 弾性変いのセロ解す ジャイロ原理とそ インピーダンス変	Experienced Experienced			

		電気電子式センサ (3) 圧電効果、ゼーベック効果などのセン! いて考察する。	サへの応用につ	圧電効果、ゼーベッ いて理解する。	yク効果などのセンサへの応用につ
	12th	流体式センサ 流体原理を用いた流体量の測定および3 ータの原理について考察する。	空気マイクロメ	流体原理を用いた流ータの原理について	流体量の測定および空気マイクロメ C理解する。
	13th	光学式センサ 光干渉法、モアレ法の原理と応用につい 光学式センサの精度を通じて測定の高料 因について考察する。			法の原理と応用について考察する。 度を通じて測定の高精度化とその要 る。
	14th	その他の方式 波動現象を用いたセンサについて考察 [。]	する。	波動現象を用いたも	センサについて理解する。
	15th	まとめ 全 14 週の総括として計測システムの『 える。	事例について考	全 14 週の総括として計測システムの事例につい解する。	
	16th	レポート課題			
Evaluation Metho	od and W	/eight (%)			
		講義への理解と取り組み状況	レポート課題		Total
Subtotal		60	40		100
基礎的能力		0	0	0	
専門的能力		60	40		100
分野横断的能力		0	0		0

	Akashi College		Year 2024			Course Title Random Signal Analysis		
Course	Informa	tion						
Course Co	ode	6018			Course Categor	y Special	zed / Elective	
Class For	mat	Lecture			Credits	Acaden	nic Credit: 2	
Departme	ent	Mechanica Engineerir	l and Electronic Ig	System	Student Grade	Adv. 1s	t	
Term		Second Se	mester		Classes per We	ek 2		
Textbook	and/or Materials							
Instructo		INOUE Ka	zunari					
Course	Objectiv	es						
(2) Can c	:alculate qu	Jeues using p	arameters such	as average arriva	al and average se	ervice in relátic	nd probability theory n to queuing theory. relation to reliability analysis.	
Rubric								
			Ideal Level		Standard Level		Unacceptable Level	
Achievement 1			Can fully explaissues and calcusing the basic	ulate probability	Can explain the and calculate the using basic rule	ne probability	Cannot explain the basics issue and calculate the probability using basic rules.	
Achievem	nent 2		Can fully calcul parameters suc arrival and ave		Can calculate q parameters suc arrival and ave	ch as average	Cannot calculate queues using parameters.	
Achievem	nent 3		Fully understar calculate the fa expectancy, an series-parallel systems.	nd how to hilure rate, life and reliability of	Understand hor failure rate, life reliability of ser redundant syst	expectancy, a ries-parallel and	nd calculate the failure rate, life	
Assigne	ed Depar	tment Obj	ectives					
Teachin	ng Metho	od						
Outline		Handling of to the fast irregular d	est possible solu	d large amounts o ution. This course	f data requires s will be held in le	statistical think ecture and exer	ng. Statistical analysis of data leads cise formats while introducing	
		F						
Style		on each it	ks 1 to 15, class em set in the Co	ses will be held in ourse Objectives a	lecture and exer nd Aims.	cise formats. <i>A</i>	ssignment exercises will be based	
Style Notice		on each ite This cours guarantee assignmer	em set in the Co e's content will a d in classes and at reports.	ourse Objectives a amount to 90 hou the standard self	nd Aims. Irs of study in to -study time requ	tal. These hou iired for pre-st	rs include the learning time udy / review, and completing	
Notice	teristics (on each ite This cours guarantee assignmer Students v	em set in the Co e's content will a d in classes and at reports. who miss 1/3 or	ourse Objectives a amount to 90 hou the standard self more of classes v	nd Aims. Irs of study in to -study time requ	tal. These hou iired for pre-st	rs include the learning time udy / review, and completing	
Notice Charact	teristics (on each ite This cours guarantee assignmer Students v	em set in the Co e's content will a d in classes and at reports.	ourse Objectives a amount to 90 hou the standard self more of classes v arning	nd Aims. Irs of study in to -study time requ	tal. These hou iired for pre-st e for evaluation	rs include the learning time udy / review, and completing	
Notice Charact Active	e Learning	on each ite This cours guarantee assignmer Students v	em set in the Co e's content will d in classes and it reports. who miss 1/3 or Division in Le	ourse Objectives a amount to 90 hou the standard self more of classes v arning	nd Aims. Irs of study in to -study time requ Vill not be eligible	tal. These hou iired for pre-st e for evaluation	rs include the learning time cudy / review, and completing n.	
Notice Charact Active	e Learning	on each ite This cours guarantee assignmer Students v of Class / [em set in the Coe's content will din classes and it reports. who miss 1/3 or Division in Le	ourse Objectives a amount to 90 hou the standard self more of classes v arning	nd Aims. Irs of study in to -study time requ Vill not be eligible	tal. These hou iired for pre-st e for evaluation o Remote Class	rs include the learning time cudy / review, and completing n.	
Notice Charact Active	e Learning	on each ite This cours guarantee assignmer Students v of Class / [em set in the Coe's content will of in classes and it reports. Who miss 1/3 or Division in Le	amount to 90 hou the standard self more of classes v arning T	nd Aims. Irs of study in to -study time requivill not be eligible Applicable to	tal. These hour irred for pre-st e for evaluation or Remote Class Goals	rs include the learning time udy / review, and completing n. Instructor Professionally Experienced e guidance, what is covered in this	
Notice Charact Active	e Learning	on each ite This cours guarantee assignmer Students v of Class / [1st	em set in the Coe's content will of in classes and it reports. who miss 1/3 or Division in Le Aided by IC Aided by IC Aided by IC heme explain the guida burse, and evalutions and evalutions in the guida burse, and evalutions are cobability, indeprobability, explain binding evaluations.	amount to 90 hou the standard self more of classes varning T nce, what is cover lation method. tical handling of events, independer	nd Aims. Irs of study in to- study time requivill not be eligible Applicable to red in this vents and endency, and	Goals Understand the probability, understand but the probability, understand bit understand bit the probability.	rs include the learning time ady / review, and completing in. Instructor Professionally Experienced e guidance, what is covered in this valuation method. e statistical handling of events and dependence and dependency, and inding events, independence,	
Notice Charact Active	e Learning	on each ite This cours guarantee assignmer Students v of Class / [1st	em set in the Coe's content will of in classes and it reports. who miss 1/3 or Division in Le Aided by IC	amount to 90 hou the standard self more of classes varning T nce, what is coveration method. tical handling of events, independer sayes' theorem. Ince and deviation method deviation method.	nd Aims. Irs of study in to- study time requivill not be eligible Applicable to red in this vents and endency, and ance, conditional and Z-	Goals Understand the course, and even understand the probability, understand bi conditional productional prod	rs include the learning time ady / review, and completing in. Instructor Professionally Experienced e guidance, what is covered in this valuation method. e statistical handling of events and dependence, and	
Notice Charact Active	Plan	on each ite This cours guarantee assignmer Students v of Class / [1st	em set in the Coe's content will of in classes and it reports. who miss 1/3 or Division in Le Aided by IC	amount to 90 hou the standard self more of classes varning T nce, what is coveration method. tical handling of endence and dependence and dependence and deviation icators of scattered aganize 2D data ar	nd Aims. ars of study in to- study time requivill not be eligible Applicable to red in this vents and endency, and and z- and z- and data.	Goals Understand the probability, understand by conditional production of the probability. Understand by conditional production as Can understand	rs include the learning time ady / review, and completing in. Instructor Professionally Experienced e guidance, what is covered in this raluation method. e statistical handling of events and dependence and dependency, and indig events, independence, abability, and Bayes' theorem. Iriance and deviation, and Z-indicators of scattered data. In the dependence of the scattered data and down to organize 2D data and	
Notice Charact Active	Plan	on each ite This cours guarantee assignmer Students v of Class / [1st	em set in the Coe's content will of in classes and it reports. who miss 1/3 or Division in Le Aided by IC	amount to 90 hou the standard self more of classes varning T nce, what is coveration method. tical handling of elevents, independence and dependence and deviation icators of scattered ganize 2D data and correlation.	nd Aims. ars of study in to- study time requivill not be eligible Applicable to red in this vents and endency, and and z- and z- and data.	Goals Understand the probability, Understand bit conditional productional process of the conversion as Can understar about orthogo Exercise 1	rs include the learning time ady / review, and completing in. Instructor Professionally Experienced e guidance, what is covered in this valuation method. e statistical handling of events and dependence and dependency, and inding events, independence, shability, and Bayes' theorem. riance and deviation, and Z-indicators of scattered data. In the dependence of the professional triance and deviation.	
Notice Charact Active Course	Plan	on each ite This cours guarantee assignmer Students voor Class / E In the course of C	em set in the Coe's content will of in classes and it reports. who miss 1/3 or Division in Le Aided by IC A	more objectives a amount to 90 hou the standard self more of classes warning T mce, what is cover attion method. Itical handling of events, independence and deviation icators of scattered and self-bayes' theorem. Ince and deviation icators of scattered and correlation.	nd Aims. ars of study in to- study time requivill not be eligible. Applicable to red in this vents and endency, and and Z- and about	Goals Understand the probability. Understand bi conditional productional production	es include the learning time and / review, and completing in. Instructor Professionally Experienced e guidance, what is covered in this raluation method. e statistical handling of events and dependence and dependency, and indig events, independence, abability, and Bayes' theorem. iriance and deviation, and Z-indicators of scattered data. id how to organize 2D data and inality and correlation. class time	
Notice Charact Active Course	Plan	on each ite This cours guarantee assignmer Students voor Class / E In the course of C	em set in the Coe's content will of in classes and it reports. who miss 1/3 or Division in Le Aided by IC	more objectives a amount to 90 hou the standard self more of classes warning T mce, what is cover attion method. Itical handling of events, independence and deviation icators of scattered and self-bayes' theorem. Ince and deviation icators of scattered and correlation.	nd Aims. ars of study in to- study time requivill not be eligible. Applicable to red in this elements and endency, and and Z- and about eving average.	Goals Understand the probability. Understand bi conditional pro Understand bi Can understand bi Submit within Understand at average methological properties of the properties	es include the learning time ady / review, and completing in. Instructor Professionally Experienced e guidance, what is covered in this raluation method. e statistical handling of events and dependence and dependency, and inding events, independence, abability, and Bayes' theorem. riance and deviation, and Z-indicators of scattered data. d how to organize 2D data and inality and correlation. class time rout calculating using moving ods and noise reduction. gnals and noise, and S/N ratio	
Notice Charact	Plan	on each ite This cours guarantee assignmer Students v of Class / [Interpretation of the course and the course Interpretation of the course Interpretati	em set in the Coe's content will a d in classes and it reports. who miss 1/3 or Division in Le Aided by IC Aided by IC	amount to 90 hou the standard self more of classes varning T nce, what is cover lation method. tical handling of endence and dependence and dependence and dependence and deviation icators of scattered ganize 2D data and correlation.	nd Aims. Irs of study in to- study time requivill not be eligible Applicable to red in this vents and endency, and and Z- and about ving average ratio decibel	Goals Understand the probability. Understand bi conditional pro Understand bi conversion as Can understand about orthogo Exercise 1 Submit within Understand ab average methodological colcular understand sidecibel calcular Understand Ty	es include the learning time ady / review, and completing in. Instructor Professionally Experienced e guidance, what is covered in this raluation method. e statistical handling of events and dependence and dependency, and inding events, independence, abability, and Bayes' theorem. riance and deviation, and Z-indicators of scattered data. d how to organize 2D data and inality and correlation. class time rout calculating using moving ods and noise reduction. gnals and noise, and S/N ratio	
Notice Charact Active Course	Plan	on each ite This cours guarantee assignmer Students voor Class / [1st E: 2nd E: 2nd Pi 3rd Ucc 4th Oi 5th E: 6th E: 7th E: 8th E: 0th E:	em set in the Coe's content will of in classes and it reports. who miss 1/3 or Division in Le Aided by IC	nce, what is cover attion method. tical handling of events, independer and deviation icators of scattered are correlation. ss time culating using mose reduction. and noise, and S/N and Type 2 errors, and amount of the country of	nd Aims. Irs of study in to- study time requivill not be eligible Applicable to red in this vents and endency, and and Z- and about ving average ratio decibel	Goals Understand the conversion as Can understand vaconversion as Can understand about orthogo Exercise 1 Submit within Understand at average methodosibility. Understand sidecibel calcular understand at average methodosibel calcular understand sidecibel calcular understand Tytesting.	e guidance, what is covered in this raluation method. e statistical handling of events and dependence, and dependency, and making events, independency, and making events, independence, abability, and Bayes' theorem. riance and deviation, and Z-indicators of scattered data. d how to organize 2D data and nality and correlation. class time rout calculating using moving ods and noise reduction. gnals and noise, and S/N ratio tions. rpe 1 and Type 2 errors, and	
Notice Charact Active Course	Plan	on each ite This cours guarantee assignmer Students v of Class / [The cours	em set in the Coe's content will of in classes and it reports. who miss 1/3 or Division in Le Aided by IC A	nce, what is cover attion method. tical handling of events, independer and deviation icators of scattered are correlation. ss time culating using mose reduction. and Type 2 errors, and Type 2 errors, and Type 2 errors, and to corve, failure reductive, and to corve, failure reductive, and the corve, failure reductive, and the corve, failure reductive,	nd Aims. Irs of study in to- study time requivill not be eligible The Applicable to the standard and and about Ired in this Ired in this	Goals Understand the conversion as Can understand by Conversion as Can understand about orthogo Exercise 1 Submit within Understand at average methodos Understand at average methodos Understand at average methodos Understand Siecibel Calculations. Exercise 2 Submit within Understand the period of time Und	es include the learning time and / review, and completing in. Instructor Professionally Experienced e guidance, what is covered in this raluation method. e statistical handling of events and dependence and dependency, and inding events, independence, abability, and Bayes' theorem. riance and deviation, and Z-indicators of scattered data. id how to organize 2D data and inality and correlation. class time rout calculating using moving ods and noise reduction. gnals and noise, and S/N ratio tions. ripe 1 and Type 2 errors, and class time e bathtub curve, failure rate for a and life expectancy. e calculation of the average int and reliability from the initial	

	12th	Exercise 3 Submit within clas	ss time	Exercise 3 Submit within class time				
	13th	Program developm notebook Explain data analy DataFrame creation		3 17	Program development environment using Jupyter notebook Understand program data analysis using pandas, and DataFrame creation and editing.			
	14th	Explain visualization graph creation.	on with Matplotlib	Understand visual various graph cre		plotlib and		
	15th	Exercise 4 Submit within clas	ss time		Exercise 4 Submit within cla	ss time		
	16th	No final exam			No final exam			
Evaluation M	1ethod and 1	Weight (%)						
	Exercise						Total	
Subtotal	100	0	0	0	0 0 100		100	
Basic Proficiency	0	0	0	0	0	0		
Specialized Proficiency					0 0 100			
Cross Area Proficiency	0	О	0	0	0 0 0			

А	kashi Co	ollege	Year	2024			urse	Advanced Electromagnetics		
Course	Informa	tion								
Course Co	ode	6019			Course Catego	ry S	Specializ	ed / Elective		
Class For	mat	Lecture			Credits Academic		Academi	Credit: 2		
Departme	ent	Mechanie Engineer	cal and Electroni ring	c System	Student Grade Adv. 1st		Adv. 1st			
Term			Semester		Classes per We	eek 2	2			
Textbook										
Teaching Instructor										
	Objectiv	 /es								
Evaluation Evaluation fields duri Evaluation Evaluation	n item (1) n item (2) ing polariz n item (3)	Can formul Understand ation. Can formul	late laws and pro		and magnetic fie	ld pheno	mena a	applied problems. antitative evaluation of electric nd solve applied problems.		
Rubric			I		la			T.,		
			Ideal Level	. lawa and	Standard Level		J	Unacceptable Level		
Achievement 1				laws and lectrostatic field nd solve applied	Can formulate problems of ele phenomena an problems.	ectrostat		Cannot formulate laws and problems of electrostatic field phenomena and solve problems.		
Achievement 2			Understand the dielectrics and problems relaquantitative electric fields polarization.	d can solve applied ted to the valuation of	Understand the dielectrics and problems relat- quantitative ev electric fields d polarization.	can solv ed to the aluation	re e	Do not understand the nature of dielectric materials and cannot solve problems related to the quantitative evaluation of electric fields during polarization.		
Achievement 3			Can formulate problems of c magnetic field solve applied	urrent and I phenomena and	Can formulate problems of cu magnetic field solve problems	irrent an	d	Cannot formulate laws and problems of current and magnetic field phenomena and solve problems.		
			Can derive Ma	axwell's tic equations and	Can derive Maxwell's electromagnetic equations and solve problems.			Cannot derive Maxwell's		
Assigne	d Depar	tment Ob	jectives							
Teachin	g Metho	od								
Outline		Departm provide (related for the A electrom	nent and aims to university-level le to peripheral bas advance Courses agnetics at a un	se is based on Electromagnetics I and II taught in ent and aims to further enhance and develop the niversity-level lessons, however some parts were o peripheral basic academic ability, etc.), or simp dvance Courses, it is desirable to maintain the aca agnetics at a university level both in name and re e supplementing the content of Electromagnetics				nagnetics I and II also largely ue to academic constraints their stricter handling. However basic subjects like		
Style		mark is	a score of 60 or	lation will be based 80% on periodic exam scores and 20% on presentation performance. The score of 60 or more in total for these. Handouts will have content on electromagnetic theory on, and specific computational problems.						
Notice		guarante assignme at our so	eed in classes an ent reports. It is chool's Electrical	d the standard self	-study time requitudents have straightering beparting Departing Departing beparting because in the control of t	uired for udied Ele ment pri	pre-stu ectroma or to tal	s include the learning time dy / review, and completing gnetics I and II (in years 3 and 4) king this course. grade.		
Charact	eristics	of Class /	Division in Lo	earning						
☑ Active	Learning		☐ Aided by I	СТ	☑ Applicable t	o Remot	e Class	☐ Instructor Professionally Experienced		
			1		1			1 = Apolitorio da		
Course	Plan									
			Theme			Goals				
		1st	and electric pow phenomena. De potential of an e electric field as a	ds in a vacuum e virtual concepts er lines as fields of fine the electric por lectric field, and co an electric potentia	f electrical tential as onsider the I gradient. Use	electrical and electric ential as phenomena. nsider the potential of a gradient. Use electric field		e virtual concepts of electric fields wer lines as fields of electrical an define the electric potential as electric field, and consider the an electric potential gradient.		
2nd Semeste r	3rd Quarter	2nd	be used when ca of its meaning in	theorem, which is alculating electric find physics and applications.	elds, in terms cation to	likely to	be use of its me	auss's theorem", which is most d when calculating electric fields, in aning in physics and application to d solve example problems.		
		3rd	Examine the div and vectors in b terms by introdu explain example equations, which	place's and Poisson's equations amine the divergence of electric power lines d vectors in both physical and mathematical ms by introducing divergence (div). Also, plain example uses for Laplace's and Poisson's uations, which are the most versatile and well- own equations for describing electrostatic			Can examine the divergence of electric polines and vectors in both physical and mathematical terms by introducing diverg (div). Also understand how to use Laplace Poisson's equations, which are the most vand well-known equations for describing electrostatic fields.			

	4th	Capacitance Outline the potential and capacity factors, and the energy of conductive systems, in regards to a charged conducting system. Learn more about the two most popular conducting systems, namely capacitance, including examples of actual calculations.	Understand the potential and capacity factors, and the energy of conductive systems, in regards to a charged conducting system. Understand the two most popular conducting systems, namely capacitance, including examples of actual calculations.
	5th	Dielectric materials (polarization) In many cases, capacitors have insulators (dielectrics) rather than vacuums (air). Learn about various materials' dielectric properties by introducing the concept of flux density in order to understand the physical phenomena of dielectric materials in electric fields.	In many cases, capacitors have insulators (dielectrics) rather than vacuums (air). Can explain various materials' dielectric properties by introducing the concept of flux density in order to understand the physical phenomena of dielectric materials in electric fields.
	6th	Electric fields in dielectric materials Solve example problems and explain the handling of electric fields in dielectric materials, in particular, the interface conditions for dielectric devices, electric power line refraction, the energy density of electric fields, and the forces acting on dielectric materials (the virtual displacement method).	Can solve example problems and explain the handling of electric fields in dielectric materials, in particular, the interface conditions for dielectric devices, electric power line refraction, the energy density of electric fields, and the forces acting on dielectric materials (the virtual displacement method).
	7th	Electric field imaging When finding electric fields in vacuums and dielectrics, while it is generally necessary to solve Laplace's and Poisson's equations, in some special boundary conditions, one can use a sophisticated and simple "imaging" method that has been known for many years. Explain this "imaging" method.	When finding electric fields in vacuums and dielectrics, while it is generally necessary to solve Laplace's and Poisson's equations, in some special boundary conditions, one can use a sophisticated and simple "imaging" method that has been known for many years. Can explain this "imaging" method.
	8th	Current fields and electrostatic fields When a current is distributed through a continuous conductor there are times when problems may be easily solved by using similarities with the electrostatic field. Also, electromagnetically express Kirchhoff's Law, which often appears in circuits.	When a current is distributed through a continuous conductor there are times when problems may be easily solved by using similarities with the electrostatic field. Also, electromagnetically express Kirchhoff's Law, which often appears in circuits.
	9th	Magnetic field Explain in detail the process that starts with the Biot–Savart law and derives Ampère's circuital integral law, from the fundamental point of view that currents are the sources of magnetic fields.	Can explain the process that starts with the Biot–Savart law and derives Ampère's circuital integral law, from the fundamental point of view that currents are the sources of magnetic fields.
	10th	Calculation of magnetic field distribution In describing a magnetic field that has a different starting point from that of an electric field, it becomes necessary to have a mathematical expression that differs from that of an electric field. In magnetic fields, the vector rotation (rot) is important. Explain vector potential, forces acting on electric currents, etc.	In describing a magnetic field that has a different starting point from that of an electric field, it becomes necessary to have a mathematical expression that differs from that of an electric field. Can explain vector rotation (rot) in magnetic fields, vector potential, forces acting on electric currents, etc.
	11th	Magnetic substances Most actual electric equipment that utilize magnetic fields use magnetic substances (ferromagnetic substances). Explain magnetic substances that are difficult to handle theoretically, including the correspondence between magnetic and electrostatic fields (BD- and HE-compatible), magnetic circuits, and the energy density of magnetic fields.	Most actual electric equipment that utilize magnetic fields use magnetic substances (ferromagnetic substances). Can explain magnetic substances that are difficult to handle theoretically, including the correspondence between magnetic and electrostatic fields (BD-and HE-compatible), magnetic circuits, and the energy density of magnetic fields.
4th Quarter	12th	Electromagnetic induction phenomenon Electromagnetic induction phenomenon is the principle for many kinds of equipment such as generators. However, electromotive force is generated by both the temporal variation of the magnetic flux itself and the relative motion of the conductor to it. Treat this phenomenon mathematically and derive Maxwell's electromagnetic equations.	Electromagnetic induction phenomenon is the principle of many kinds of equipment such as generators. However, electromotive force is generated by both the temporal variation of the magnetic flux itself and the relative motion of the conductor to it. Can treat this phenomenon mathematically and derive Maxwell's electromagnetic equations.
	13th	Inductance Inductance often appears as a representative element in electrical circuits. Learn about self- inductance and mutual inductance from the perspective of magnetic field energy, and explain the wave propagation speed of the reciprocating line as a calculation example.	Inductance often appears as a representative element in electrical circuits. Learn about self-inductance and mutual inductance from the perspective of magnetic field energy, and can calculate the wave propagation speed of the reciprocating line using calculation examples.
	14th	Maxwell's electromagnetic equations Explain Maxwell's electromagnetic equations in detail, which have critical meaning for those who learn electrical and electronic engineering as well as physics. In addition to deriving equations, do reverse derivations for the basic laws of electric field magnetic fields that have been studied.	Can explain Maxwell's electromagnetic equations in detail, which have critical meaning for those who learn electrical and electronic engineering as well as physics. In addition to deriving equations, can do reverse derivations for the basic laws of electric field magnetic fields that have been studied.
	15th	Solutions for Maxwell's electromagnetic equations and electromagnetic waves Solve Maxwell's electromagnetic equations as simultaneous differential equations and calculate electromagnetic waves' presence and velocity as a result of doing this. Also explain the basic characteristics of electromagnetic waves.	Can solve Maxwell's electromagnetic equations as simultaneous differential equations and calculate electromagnetic waves' presence and velocity as a result of doing this. Can also explain the basic characteristics of electromagnetic waves.

	16th	Final exam								
Evaluation Method and Weight (%)										
	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total			
Subtotal	80	20	0	0	0	0	100			
Basic Proficiency	0	0	0	0	0	0	0			
Specialized Proficiency	80	20	0	0	0	0	100			
Cross Area Proficiency	0	0	0	0	0	0	0			

А	Akashi College			Year	2024		(Course Title	Advanced Strength of Materials		
Course	Informat	tion									
Course Co		6020				Course Categor	γ	 	ed / Elective		
Class Forr	nat	Lecture	201 20	nd Flootropic	Custom	Credits		Academi	Credit: 2		
Departme	nt	Engineer		nd Electronic	System	Student Grade Adv. 1st					
Term		Second S	Semester Classes per Week 2								
Textbook Teaching	Matérials										
Instructor		MORISH1	ITA T	omohiro							
1) System them to b 2) Unders dimensior 3) Unders various pr 4) Unders intensity of	asic problet and the ball problem tand the aroblems of tand the national tand the malculations.	nderstand thems. Pasic issues P	relat sues f mat beha	red to flat plat related to str terials. viors related	te bending proble	ms, and can cor lastic moduli, ar	mpare	and exam	ial stress state and can apply ine one-dimensional and two- to three-dimensionally examine alyze them, and can apply them to		
Rubric	•										
			Ide	eal Level		Standard Level			Unacceptable Level		
	1) Fundamental equations for nulti-axial stress			ndamental éd	ss and can apply	Can apply various multiaxial stres problems.			Cannot apply various formulae for multiaxial stress to basic problems.		
(2) Bendii	(2) Bending of plate			lated to flat p oblems and c	an explain the	Can calculate s deflection of ba using formula r plate bending p	isic pr elated	oblems by	Cannot calculate stress and deflection of basic problems related to flat plate bending.		
(3) Stress	(3) Stress and strain			nderstand the advanced issues			e adva	inced issue	Do not understand the advanced issues related to stress, strain, and elastic moduli and remain limited to only a one-dimensional understanding.		
(4) Elasto	plastic pro	blem	be ela ho ap	nderstand the haviors relate astoplasticity by to analyze ply them to indiculations.	Understand the behaviors relat elastoplasticity how to analyze	ed to of ma	the aterials and	Do not understand the mechanical phenomena related to elastoplasticity of materials.			
(5) Logica interactive	Il thinking e commun	and ication	str	in discuss var rength of mat hers based or	Can explain bas formulae to oth problems of str materials.	ners o	n various	Cannot explain to others the formation of various formulae and examples of their use on various problems of strength of materials.			
Assigne	d Depart	ment Ob	ject	ives					materials		
Teachin	g Metho	d									
Outline		on the ye	ear 3'	's Strength of	lculate and evalua ously learn relate f Materials I, year dvanced issues.	ate the strength d matters, think 4's Strength of	of str logic Mater	ructural and ally, and ha rials II, and	d mechanical components, ave technical discussions. Based I year 5's Strength of Materials III,		
Style					lecture style with						
Notice		This cour guarante assignme Students	rse's ed in ent re who	content will a classes and eports. Stude miss 1/3 or	amount to 90 hou the standard stud nts should try to t more of classes w	rs of study in to ly time required think and under vill not be eligible	tal. The for prestand e for e	nese hours re-study / for themse evaluation.	include the learning time review, and completing elves.		
Charact	eristics o			ision in Lea							
□ Active		,		Aided by IC		☑ Applicable to	o Rem	note Class	☐ Instructor Professionally Experienced		
Course	Dlan										
Course	iuii	-	Them	ne			Goals	<u> </u>			
				ew of multiax	ial stress (1)		Can s	show a sim	ple application example of stress- icement-strain relations in the		
2nd Semeste r	3rd Quarter	2nd	Revie	ew of multiax	ial stress (2)	multiaxial stress state. Can use equilibrium equations in a rectan coordinate system. Can derive Navier–Store equations. Can use the basic formula in cand spherical coordinate systems. Can travarious formulae from a rectangular coordinate. system to polar coordinate.			ium equations in a rectangular em. Can derive Navier–Stokes use the basic formula in cylindrical ordinate systems. Can transform e from a rectangular coordinate		
		3rd	Flat p	olate bending	(1): Beams and	flat plates		arities and	rmulas for beam. Can explain the extensibility of beams and flat		

		4th	Flat plate bending (2): Basic formurectangular plates	la for	bending rectangu	andling of unknown functions in lar plates and can explain the the basic formula.	
		5th	Flat plate bending (3): Stress and or rectangular plates	deflection of	Can apply the basic formula for rectangular plates to basic problems, and calculate stress and deflection.		
		6th	Flat plate bending (4): Axisymmetr circular plates	ic bending of	that is expressed	sic formula for a circular plate in polar coordinates to a basic culate stress and deflection.	
		7th	Review of plane stress and plane st	rain	formulae for stream and principal and also explain the conformulae for strain	oordinate transformation sses in the plane stress states maximum shear stresses. Can coordinate transformation ins in plane strain states and kimum shear strains.	
		8th	Stress and strain (1): Direction cos coordinate transformations	ines and	Can use direction coordinate transf	cosines to describe stress ormations.	
		9th	Stress and strain (2): Stress		maximum shear	alculation of principal and stresses in a three-dimensional explain stress invariants.	
		10th	Stress and strain (3): Coordinate to for strain and yield criterion.	Can explain the coordinate transformation formula for strain in three-dimensional deformation. Can calculate strain ener three-dimensional stress state, and application intensity design.		in three-dimensional calculate strain energy in a	
		11th	Stress and strain (4): Stress-strain	equation	Understand gene can explain the e elastic bodies.	ralized stress-strain relations and lastic modulus for anisotropic	
	4th	12th	Stress and strain (5): Index notation	tion Can express t		formulas using index notation.	
	Quarter	13th	Elastoplastic problems (1): Materia torsion and bending of elastic-perfebodies	l models and ectly plastic	Can explain the relationship between load and deformation in the torsion and bending of elastic perfectly plastic bodies.		
		14th	Elastoplastic problems (2): Limit lo residual stress caused by plastic de	ads and the limit loads in beams, a		mit loads in combination rods, beams, and plastic joints. Can tress caused by plastic	
		15th	Elastoplastic problems (3): Spheric and axisymmetric problems	al symmetry	Can explain the yield start condition and residual stress of elastic-perfectly plastic spherical shells, cylinders, and rotating circular plates.		
		16th	Final exam				
Evaluati	on Meth	nod and '	Weight (%)				
	-		Examination	Exercise		Total	
Subtotal			80	20		100	
Basic Prof	iciency		0	0		0	
Specialize	d Proficier	ncy	80	15		95	
Cross Are	a Proficier	ncy	0	5		5	

А	Akashi College		Year	2024		Course Title	Production Sys	stems	
Course	Inform	ation							
Course Co	ode	6021			Course Category	Specializa	ed / Elective		
Class Forr	mat	Lecture			Credits	Academi	Credit: 2		
Departme	ent	Engineerir		System	Student Grade	Adv. 1st			
Term		First Seme	ester		Classes per Wee	k 2			
Textbook Teaching	and/or Material								
Instructor	-	OHMORI S	Shigetoshi						
Course	<u>Object</u>	ives							
Rubric					_				
			Ideal Level		Standard Level		Unacceptable Le	evel	
Achievem	ent 1								
Achievem									
Achievem									
		ırtment Obj	ectives						
Teachin	g Meth	od							
Outline									
Style									
Notice									
Charact	eristics	of Class / I	<u>Pivision in Lea</u>	arning			_		
□ Active	Learnin	9	☐ Aided by IC	Aided by ICT Applicable to			o Remote Class		
Course	Plan								
Course	l	Т	heme			Goals			
		1st							
		2nd							
		3rd							
	1st	4th							
	Quarter	5th							
		6th							
		7th							
1st Semeste		8th							
r		9th							
		10th							
		11th							
	2nd	12th							
	Quarter	13011							
		14th							
		15th							
E	Mad	16th	-:						
Evaluati	ion Mei	thod and W	eignt (%)	T	<u> </u>				
	E	xamination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total	
Subtotal	0		0	0	0	0	0	0	
Basic Proficienc			0	0	0	0	0	0	
Specialize Proficience	d y		0	0	0	0	0	0	
Cross Are Proficience			0	0	0	0	0	0	

Д	kashi Co	ollege	\	/ear	2024				Course Title	Energy Technology I	
Course	Informa	tion							1100	1	
Course Co		6022					Course Catego	ry	Specializ	red / Elective	
Class For	mat	Lecture					Credits		Academi	c Credit: 2	
Departme	ent	Mechani Enginee	cal and E	lectronic	c System		Student Grade	e Adv. 1st			
Term			Semester				Classes per We	Veek 2			
Textbook Teaching											
Instructor											
The goal (1) Under (2) Under (3) Under (4) Set a	stand the stand the stand the problem a		tion of he ion metho ethod n simulation	at fluid od of bas ons on o	analysis. sic equat one's owi	ions.		analys	sis of heat	fluids in energy engineering.	
Rubric											
			Ideal L				Standard Level			Unacceptable Level	
Achievem	ent 1		the ba		and and o ations for	an derive heat	Understand the for heat fluid a	e basic nalysis	equations.	Do not understand the basic equations for heat fluid analysis.	
Achievem	ent 2		metho	d of bas	ne discret sic equat em on its	ions and	Understand the method of basi			Do not understand the discretization method of basic equations.	
Achievem	ent 3				ne HSMA0 ram it on	C method one's	Understand the method.	e HSM.	AC	Do not understand the HSMAC method.	
		simula		blem, pei ind analy		Can set a prob simple simulati own.			Cannot set a problem and perform simple simulations on one's own.		
			to one	Can clearly present the answers to one's own problem in English in an easy-to-understand presentation.			Can present the answers to one's own problem in a presentation.			Cannot present the answers one's own problem in a presentation.	
Assigne	d Depar	tment Ol	ojective								
Teachin	g Metho	d									
Outline		energy t major et fluid are course,	through g ffect on p widely co students	enerato erforma onducte will lear	rs. In ad ince in fu d with th n about t	dition, how lel cells, et le aim of re the HSMAC	v the movemen c. In developing educing develop	t of wa energoment	ater and e gy equipm costs and	, etc. and converted to electrical lectrolytes is controlled has a ent, numerical analyses of heat obtaining detailed data. In this nethods to numerically analyze	
Style		The first	half of th	ne class	is made	up of lecti				d half, students will conduct	
Notice		guarante assignm thermod students conducte	eed in cla lent repor lynamics, s need to ed in Engl	sses and ts. Whil thoroughave a lish.	d the sta le it is de gh reviev minimun	ndard self- sirable for ving of the n knowledg	-study time requestudents to have lessons will help	uired for e a ba p stud e. In a	or pre-stu ssic knowle lents unde ddition, th	s include the learning time dy / review, and completing edge of fluid dynamics and erstand the content. Furthermore, ais course will fundamentally be	
Charact	eristics o	of Class /	['] Divisio	n in Le	earning						
☐ Active	Learning		□ Aid	ed by I	СТ		☐ Applicable t	o Rem	note Class	☐ Instructor Professionally Experienced	
Course	Dlan										
Course	riali		Theme					Goals			
		1ct		intions f	for book	fluid aire	ation (1)	Unde	rstand the	equations of the fluid continuum	
		1st	basic equ	uations 1	ior neat 1	fluid simul	au011 (1)	and t	he derivat	ion of equations of motion.	
		2nd	Basic equ	uations 1	for heat t	fluid simul	ation (2)	motic	n and equ	derivation of fluid equations of lations of energy.	
2nd Semeste	3rd Quarter	3rd	Basic equ	uations (for heat t	fluid simul	ation (3)	meth	od of the I ment of bu	e energy equation of fluid to one sed fluid. Also, understand the Boussinesq approximation as a soyancy terms.	
1		4th	About no	ndimen	sionalizir	ng basic ed	quations	nondi make	mensiona it dimens		
		5th	Discretiza	ation me	ethod of	basic equa	ations (1)	Understand how to discretize differentia		are basic equations. Also, solution's accuracy and the	

		6th	Discretization me	thod of basic equ	uations (2)	equations that			
		7th	MAC method, and	I SMAC method		Can derive Po understand th are two of the fluid.	isson's equatio e MAC and SM explicit metho	n on pressure, and AC methods, which ods for incompressible	
		8th	HSMAC method					nod to solve the ire using Newton's	
		9th	Explanation of ass	signment 1			e of a flow in a	using free software cavity containing	
			Exercise			Can calculate the analysis re		fer coefficient from	
			Exercise				ne relationship d analysis accı	between mesh ıracy.	
	4th Quarter	12th	Explanation of ass	signment 2		Can review the engineering problems on one's own, and can discuss the problems proposed with teachers and set an appropriate problem.			
		13th	Exercise			Can program and run simulations for the problem on one's own.			
		14th	Exercise			Can program and run simulations for the problem on one's own.			
		15th	Presentation			Can present simulation results for the problem in English.			
		16th	No final exam						
Evaluati	ion Met	hod and	Weight (%)						
		kamination		Assignments	Behavior	Portfolio	Other	Total	
Subtotal	0		30	70	0	0	0	100	
Basic Proficienc	y 0		0	0	0	0	0	0	
Specialize Proficienc			30	70	0	0	0	100	
Cross Are Proficienc			0	0	0	0	0	0	

А	kashi Co	llege		Year	2024			Course Title	Tribology	
Course 1	Informat	ion			-		1			
Course Co		6023				Course Categor	ry	Specialize	ed / Elective	
Class Forr	nat	Lecture				Credits		Academi	Credit: 2	
Departme	ent	Mechanic Engineeri		nd Electronic	System	Student Grade		Adv. 1st		
Term		Second S	eme	ester		Classes per We	eek	2		
Textbook Teaching										
Instructor		KATOH T	akal	niro						
(1) Can do method fo (2) Can es (3) Can es	or evaluatir stablish eff	erstanding ng them in ective use	an a of fri	ppropriate me ction and me	riction and wear planner. ethods to control for methods for design	riction and wear	such	as lubricat	motion surfaces, and establish a ion. nt.	
Rubric						1				
				eal Level		Standard Level			Unacceptable Level	
Achievem	ent 1		th ph re es ev	e complex fr nenomena th	n surfaces, and thod for m in an	Can deepen un the complex fri phenomena that relative motion understand how them in an app	iction at occ surfa w to e	and wear ur on ces and valuate	Cannot deepen understanding of the complex friction and wear phenomena that occur on relative motion surfaces and do not understand how to evaluate them in an appropriate manner.	
Achievem	ent 2		ction and frid	effective use of ction wear as lubrication.	Understand the friction and me friction and we lubrication.	ethods	to control	Do not understand the effective use of friction and methods to control friction and wear such as lubrication.		
Achievement 3				nd specific m	various guidelines ethods for ional parts of	Understand the various guidelines and specific methods for designing frictional parts of equipment.			Do not understand the various guidelines and specific methods for designing frictional parts of equipment.	
Assigne	d Depart	ment Ob	ject	ives						
Teachin	g Metho	d								
Outline		wear phe	nom ate n ubric	nena that occ nanner, and cation. Stude	cur on relative mot also explain the et	tion surfaces—ar fective use of fri	nd to	explain how and metho	ns—i.e., the complex friction and w to evaluate them in an ds to control friction and wear fic methods for designing frictional	
Style		Classes v The contrunderstal The repo 1) An exe take into tribology survey or soft thin This cour Materials	will for ents and in the control of	ocus on a leco of the repor g. signments a e about the count interfaculication technid lubricants rs. 9) An exest based on a leco of the count interfaculication technid lubricants rs. 9) An exest based on a leco of the county	t will be instructed re as follows: contact condition be shear strength. Including the distribution of the shear strength. Including the shear strength of the shear of the sh	petween two obj 3) A survey and erivation of the on exercise on be int of wear. 10)	jects. sumn double earing Litera know	gress of the 2) An exer nary of var e integral per design me ture resear	, and group work as appropriate. e class and the students' levels of cise for friction coefficients which ious types of wear. 4) A study on art of the Reynolds equation. 6) A sthods. 8) A study on hard and rch on tribology e following subjects: Strength of , and Engineering Design II	
Notice		Before ta questions include th review, a Students	king dur ne le nd c who	the course, ring the cour tarning time completing as miss 1/3 or	se. This course's og guaranteed in class ssignment reports	content will amous ses and the star	unt to ndard	90 hours of self-study	, and be prepared to ask of study in total. These hours time required for pre-study / s presentation, or fail to submit a	
Charact	eristics c	f Class /	Div	ision in Le	earning					
□ Active	Learning			Aided by IC	 CT	☑ Applicable to	o Rem	note Class	☐ Instructor Professionally Experienced	
Course	Plan	-								
	1		Then		_		Goals	5		
			Expla		? e of tribology, lubr prication by oil.	ication	Learr and a	n an outline about lubric	e of tribology, lubrication methods, cation by oil.	
2nd Semeste r 3rd Quarter	2nd	Solid Expla	surface con ain the prope ture and pro	tact I erties of solid surfa operties of surface	layers in order			nature of solid surfaces and the operties of surface layers		
		3rd	to properly understand tribology phenomena. Solid surface contact II Explain the mechanisms for two-surface contact and true contact area wear with exercise problems.					Learn about the mechanisms for two-surface contact and true contact area wear.		

		4th	Explain Amont adhesid	n between solid sur n dry friction and lu on-Coulomb's laws on theory of frictior theory.	bricated friction, , the causes of fric	tion, for	Learn about	friction cause	s and friction theory.	
		5th	Explain the spe friction	n between solid sur n the temperature r eed characteristics properties in a vac rature on friction, a	rises of friction surf of friction and stick cuum, the effects o	c-slip, of	Learn about test friction.		cteristics and how to	
		6th	Define	on solid surfaces I and classify wear a tical handling of ead es.	and explain the ch of the importan	t	Learn about wear.	the definition	and classification of	
		7th	Explain	urface wear II In the concept of we In methods of wear.	ar maps, and discu	JSS	Learn about methods.	wear maps a	nd wear testing	
		8th	Explain	Ibrication I I the physical signif principles.	icance of fluid lubr	ication	Learn about lubrication.	the physical s	significance of fluid	
		9th	Fluid lu Explain pressu	ıbrication II ı Reynolds' fluid lub re distribution anal	prication theory and ysis of bearings.	d the	Learn about the pressure	Reynolds' flui distribution a	d lubrication theory and analysis of bearings.	
		10th	Explain	ary and mixed lubri the concept of boution, and boundary ties.	undary and mixed	cating	Learn about	Learn about boundary and mixed lubrication.		
		11th	Explain grease	ary and mixed lubri the types, propert and solid lubricant tion in situations w	ties, and applications that are used for	ns of	Learn about the types, properties, and applications of grease and solid lubricants.			
	4th Quarter	12th	Explain reform of fricti	Surface reforming technology ixplain the physical significance of surface eforming technology, its method, and examples of friction wear improvement and future prospects.				the physical sechnology, its ear improvem	significance of surface methods, and examples ent.	
		13th	Explain	xplaings design xplain the basic aspects of design using journal earings as an example.				Learn about the basic aspects of bearing design using journal bearings as an example.		
	Applie Introduced 14th techn role a			pplications of tribology in current technologies ntroduce a case from the many current echnologies where tribology plays an important ole and explain the relationship using basic nowledge.				Learn about the current application of tribology in current technologies.		
		15th	Presen Introdu	tation uce videos or resea	rch related to tribo	ology.	Learn about	research rela	ted to tribology.	
		16th	_	ıl exam						
Evaluation	on Metl	hod and \	Neight	(%)						
	Short Tests		5	Report	Presentation	Beha	vior	Other	Total	
Subtotal				40	10	20		0	100	
Basic Profi		0		0	0	0		0	0	
Proficiency	,			40	10	20		0	100	
Cross Area Proficiency		0		0	0	0		0	0	

	Akashi Co	ollege		Year	2024			ourse	Advanced Electrical Circuits
	Informa				1 -			Title	
Course C		6024				Course Category		Specialize	ed / Elective
Class For		Lecture				Credits	,		Credit: 2
Departme	ent	Mechani Enginee		nd Electronic	System	Student Grade		Adv. 1st	
Term		Second :	Seme	ester		Classes per Wee	ek	2	
Textbook	and/or Materials	Although	h text	books are no	ot used, it is recon ed as necessary.	nmended to bring	g a ref	erence bo	ok on electric circuits. In addition,
Instructo		HOSOKA			eu as necessary.				
	Objectiv		,						
1) Unders 2) Can pe 3) Can se	stand the serform and u	various theo alysis and do se appropri	esign iate m	of a number nethods for a	, .	its. gning electrical ci	ircuits		ltidimensional thinking.
	ents will be	handed ou	ut for	review purp	oses at the end of	the lecture. It is	impoi	tant to do	them through self-study.
Rubric			1.	11 1					<u></u>
				eal Level	o various	Standard Level			Unacceptable Level
Achievem	chievement 1			nderstand the eorems that r electrical ci in use them nalysis.	form the basis rcuit analysis and	Understand the theorems that fo for electrical circ	orm th	ne basis	Do not understand the various theorems that form the basis for electrical circuit analysis.
Achievem	ent 2 Can perform a design various electrical circu				complex	Can perform and design various be circuits.			Cannot perform analysis and design various basic electrical circuits.
Achievem	Achievement 3			an select and propriate monalyzing and ectrical circuit	l use the most ethod for designing its.	Can select and u appropriate met analyzing and de electrical circuits	hod fo	or	Cannot select and use an appropriate method for analyzing and designing electrical circuits.
Assigne	d Depar	tment Ob							
Teachir	ng Metho	od							
Outline		basis for this cour to perfor	r elect rse is rm cir	trical engined to learn abo rcuit analysis	ering including ele out the relationship s.	ctronic, communi between current	icatior t and	n, and info voltage in	e, and capacitance. It forms the rmation engineering. The aim of electrical circuits and to be able
Style		Classes and assi	are m	nainly conducents every w	cted by taking not eek.	es. There will be	hando	outs as ne	cessary. There will be exercises
Notice		guarante assignm This cou Electric (or have Enginee Students If studer case will	eed in relent re	n classes and eports. ssumes stud its (compulson Electrical and I (selected do d to have a land ish, they car he ayerage s	I the standard self lents have taken E ory in years 1 to 4 nd Electronics Eng or year 5) taught i	-study time requi lectrical Circuits I) taught in the El- ineering I (compi n the Mechanical f the contents of xam outside of cirm and final exam	red for and a ectrical ulsory Engir these lass h	or pre-stud II, Circuit al and Cor in year 4 neering De subjects. ours. The	include the learning time dy / review, and completing Theory, and Transient Analysis on nputer Engineering Department, and Electronics epartment in Akashi Kosen. evaluation for the exam in this rade.
Charact	eristics	of Class /	[/] Div	ision in Le	arning				
□ Active	Learning			Aided by IC	CT	☑ Applicable to	Remo	ote Class	☐ Instructor Professionally Experienced
<u>C-</u>	DI-								
Course	rian		Thor	no		T,	Goals		
		1 ot	Then					stand how	to analyze AC circuits using the
		1st 2nd		ircuits	nd miscellaneous t	hooroms (1)	vector Under	notation stand how	and vector locus. to analyze circuits using closed
				· · · · · · · · · · · · · · · · · · ·		1	Under	stand how	equations. to analyze circuits using the
		3rd		·	nd miscellaneous t	t	superposition, reciprocity, and compensation theorems.		
2nd	3rd Quarter	4th			nd miscellaneous t	l _i	Understand the methods of circuit analysis using Thévenin's, Norton's, and Millman's theorems. Understand resonant and mutual induction		
Semeste r		5th			and mutual induc	tion circuits	circuit	s.	age, currents, and power in three-
		6th		e-phase AC	<u> </u>		<u>phase</u> Under	AC. stand volt	age, currents and power in
		7th		orted wave A		(distorted wave AC.		
		8th		mary of wee					content from weeks 1 to 7.
	4th	9th One-port circuits			Understand one-port circuits. Understand the various parameters that represent				
	a			o-port circuits				ort circuits	

	11th	Transient phenomena in single-ei	nergy circuits	Understand the transient phenomena in circuits where either inductance or capacitance is present.		
	12th	Transient phenomena in multiple	-energy circuits	Understand the t	ransient phenomena in circuits itance and capacitance are	
	13th	Steady-state phenomena in distri circuits	buted-element	Understand the basic concepts and circuit properties of transmission lines where resistance, inductance, and capacitance are distributed along lines.		
	14th	Transient phenomena in distribut circuits	ed-element	Understand the transient phenomena in distributed-element circuits.		
	15th	Summary of weeks 8 to 14		Understand the c	ontent from weeks 8 to 14.	
	16th	Final exam		Understand the cweeks 9 to 14.	ontent from weeks 1 to 7 and	
Evaluation Meth	od and \	Weight (%)				
		Examination	Exercise		Total	
Subtotal		70	30		100	
Basic Proficiency		0	0	·	0	
Specialized Proficier	псу	70	30		100	
Cross Area Proficier	су	0	0		0	

Δ	kashi Co	ollege	Year	2024		Course Title	Advanced Heat Transfer		
Course	Informa	tion			1				
Course Co	ode	6025			Course Categor	y Specializ	red / Elective		
Class For	mat	Lecture			Credits	Academ	ic Credit: 2		
Departme	ent	Mechanic Engineeri	al and Electroniong	System	Student Grade	Adv. 1st			
Term		Second S	emester		Classes per We	ek 2			
Textbook	and/or Materials	Original T	ext PDF file						
Instructo		KUNIMIN	E Kanji						
Course	Objectiv	es es							
(2) Can t (3) Can t (4) Can t	heoreticall heoreticall heoreticall	y handle cor y handle pha y handle ma	ady and unstead nvective heat tra ase change heat terial transfer. at exchangers.	dy state heat cond insfer. transfer.	uction.				
Rubric									
			Ideal Level		Standard Level		Unacceptable Level		
Achievement 1			Can theoretica and unsteady conduction su	ally handle steady state heat fficiently.	Can theoretical and unsteady s conduction.	ly handle stead [,] tate heat	y Cannot theoretically handle steady and unsteady state heat conduction.		
Achievem	nent 2		Can theoretica convective her sufficiently.	ally handle at transfer	Can theoretical convective heat	ly handle transfer.	Cannot theoretically handle convective heat transfer.		
Achievem	nent 3		Can theoretica change heat t sufficiently.	ally handle phase ransfer	Can theoretical change heat tra		Cannot theoretically handle phase change heat transfer.		
			Can theoretica material trans	ally handle fer sufficiently.	Can theoretical material transfe		Cannot theoretically handle material transfer.		
			Can theoretica exchangers su	ally handle heat ufficiently.	Can theoretical exchangers.	ly handle heat	Cannot theoretically handle hea exchangers.		
Assigne	d Depar	tment Ob	jectives						
Teachin	ig Metho	od							
Outline		This cour	se focuses on th	ne theoretical hand Isfer class in the R	lling of heat trans	sfer engineering	J. It will cover the more advanced		
							osen Mechanical Engineering		
Style		Departme	ent, and assume	es that students ha	ive learned the k	nowledge of the	e subject.		
Notice		and the s To achiev Evaluatio	tandard self-stu e the goals, stu ns will be based	dv time required f	or pre-study / re oughly pre-study xams.	view, and compand review clas	rning time guaranteed in classes pleting assignment reports. ss content for each week.		
Charact	eristics	•	Division in Le		<u> </u>				
	Learning	<u> </u>	☑ Aided by I	<u> </u>	☑ Applicable to	Remote Class	☐ Instructor Professionally Experienced		
							127,00110.11000		
Course	Plan	1							
		7	Гһете			Goals			
		1st E	Basic theory			Understand the solutions, the beginning for he	e differential equations and their pasic laws of heat transfer, and the pat conduction.		
		2nd S	Steady heat stat	e conduction		Can understand steady heat co	d the problems of two-dimensional nduction.		
		3rd l	Jnsteady state h	neat conduction (1)	capacity systen			
	3rd Quarter	4th	Jnsteady state h	neat conduction (2)	Understand app state heat cond problems that a	proximation solutions for unsteady luction and the thermal conductior accompany phase changes.		
2nd		5th F	orced convectiv	e heat transfer th	eory	Understand the convective hea	e governing equation for forced t transfer.		
Semeste r		6th /	Approximation so neat transfer (1)	olutions for forced	convective	Understand the across a plate.	e laminar heat transfer of the flow		
		7th	Approximate soli ransfer (2)	utions for forced c		Understand the across a plate.	e laminar heat transfer of the flow		
		8th	Midterm exam			Can solve prob	lems related to weeks 2 to 7.		
		9th	Natural convecti	ve heat transfer th	neory	Understand natural convective heat transfer.			
		10th F	Phase change he	eat transfer theory	(1)	Understand the film condensation theory.			
	4th	11th F	Phase change heat transfer theory (1)			Understand the film boiling theory.			
	Quarter	12th	Material transfer			Understand Fick's law, diffusion coefficient, and one-dimensional diffusion phenomena.			
		13th	Heat exchangers	5 (1)			overview of heat exchangers.		
	1	11001	reac exerially ers	· (±/		oriaciotalla all	STOLVICTE OF FICAL EXCHAINGERS		

			Understand logarithmic mean temperature							
	14th	Heat exchange	rs (2)		difference.	difference.				
	15th	Heat exchange	rs (3)		Understand	d temperature eff	ficiency ratio.			
	16th	Final exam			Can solve p	problems related	to weeks 9 to 15.			
Evaluation N	Evaluation Method and Weight (%)									
	Examination						Total			
Subtotal	100	0	0	0	0	0	100			
Basic Proficiency	0	0	0	0	0	0	0			
Specialized Proficiency	100	0	0	0	0	0	100			
Cross Area Proficiency	0	0	0	0	0	0	0			

А	.kashi Co	ollege	Year	2024		Cour		Environmental Science	
Course	Informa	tion				IIU	E [
Course Co		6026			Course Categor	v Ger	neral /	Elective	
Class Forr		Lecture			Credits	<i>'</i>	/	Credit: 2	
Departme	ent	Mechani Engineer	cal and Electronic	System	Student Grade	Adv	. 2nd		
Term		First Ser			Classes per We	eek 2			
Textbook					Total Part 1				
Teaching Instructor		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	ARE Mariyashi UT	RAISHI Toshihiro					
	Objectiv		ABE MONYOSHI, HI	KAISHI TUSHIIIIU					
(1) Under to examir perspectiv (2) Exami	rstand the ne and exp ve. ine the rel	formation of the relationship be	ationships betwe etween the envir	en life, the natural	environment, ar e, think about pr	nd environi oblems wit	mental th envi	osystem, and acquire the ability issues from a multifaceted fronmental issues, and acquire	
Rubric									
			Ideal Level		Standard Level			Unacceptable Level	
Achievem	ent 1		global environ basic knowled ecosystem, ar and explain th between life, t environment,	ge of the natural and can examine be relationships the natural and lissues from a	Understand the global environm basic knowledge ecosystem, and relationships be natural environ environmental i	nent and the of the nate of th	ne itural in the	Do not understand the formation of the global environment and the basic knowledge of the natural ecosystem, and cannot explain the relationships between life, the natural environment, and environmental issues.	
		tment Ob	ojectives						
Teachin	g Metho								
Outline		lthém. (8	3 weeks taught b ures on environm	v Watanabe)	•			tems, and methods for preserving onal disparities. (7 weeks taught	
Style		The cou	rse is open to stu ne course, studer	g slides and video: dents from any de its should carefully and summarize the	partment. Classe read through th	es will be to e materials	aught s distri	s appropriate. as simply as possible. Before buted in advance to fully	
Notice		guarante assignm The leve score for	eed in classes and ent reports. els of achievemen	d the standard self t will be evaluated	-study time requ by faculty meml	iired for pro bers in the	e-stud follow	include the learning time y / review, and completing ving methods. The minimum evaluation will be "1" for Hiraishi	
Charact	eristics	of Class /	Division in Le	earning					
□ Active		,	☑ Aided by I	•	☑ Applicable to	Remote (Class	☐ Instructor Professionally Experienced	
Course	Plan								
200130	. 1011		Theme			Goals			
		1st		the global enviror on (Watanabe)	nment and the	Can explai global env	p betw	process in which the current ent was formed, and the veen pollution and health that has past.	
		2nd	Development an impacts(Watana			Can explai on the nat	n the i ural er	impact of development acitivities nviromnemt.	
		3rd	Global environme	ental issues (Wata	nabe)			current state of environmental neasures to be taken on a global	
	1st	4th	The basics of en	vironmental ecolog	gy (Watanabe)	and individ	dual or	concepts, types and distributions, ganism and population, and the ation ecology.	
1st Semeste	Quarter	5th	Biodiversity and	its crisis(Watanabo	e)	Can explai the crisis if of species.	t is fac	current state of biodiversity and ing. Can calculate diversity index	
			Ecosystem conse	ervation technique	s (Watanabe)	restoration	n, and	nical classification (conservation, creation) to protect the luding ecosystems using concrete	
		7th	The functions an ecosystems(Wat			Can explai agricultura urban ecos	al, urba	current state of forest , an and auqtic ecosystems and as.	
		8th	Ecosystem asses	sment(Watanabe)			m eco	system asses s ment using some	
	2nd Quarter	9th	Report assignme Environmental is	stem assessment(Watanabe) t assignment briefing onmental issues and history			methods. Set up and implement solutions to environmental issues in one's life. Learn about the causes and history of modern environmental issues.		

			10th	Life and society in	the Edo period			Learn about life and society before today's environmental issues arose.			
			11th	Watch the "An Inconvenient Truth" and think about it.				Learn about climate change issues.			
	12th		Watch the "An Inconvenient Truth" and think about it.			Learn about clim the challenges.	ate change issues	and recognize			
			13th	th "Ancient Futures: Learning from Ladakh"			Think about the t		roblems due to		
			14th	"Ancient Futures:	Learning from La	dakh"	Think about the t geographic inequ	time gap in the plailities.	roblems due to		
			15th	Return and amend report assignments			Add opinions to the faculty's comments sent via Teams about the assignment in week 9.				
			16th	About SDGs			Understand SDGs	5.			
Evaluati	on M	etho	od and V	Veight (%)							
			rcises(Wat	<u> </u>	Report(Hiraishi	Behavior	Portfolio	Other	Total		
Subtotal		50		0	50	0	0	0	100		
Basic Proficiency	У	0		0	0	0	0	0	0		
Specialize Proficiency			0	50 0		0	0	100			
Cross Area Proficiency	ross Area		0	0	0	0	0	0			

А	kashi Co	llege		Year	2024		C	Course Title	Engineering Presentation II	
Course	Informa	tion								
Course Co		6027				Course Categor	ry	Specializ	ed / Compulsory	
Class Forr	mat	Seminar				Credits		School C	redit: 1	
Departme	ent	Mechanica Engineeri		d Electronic	System	Student Grade		Adv. 2nd	i	
Term		Second S		ter		Classes per We	ek	後期:2		
Textbook Teaching	and/or Materials							•		
Instructor	=	HIRAISHI	Tosh	nihiro,KUNIN	INE Kanji					
	Objectiv									
way that	re knowled students f	lge in a wide om differen	e rang t spe	ge of engine cialties can	ering-related field understand .	ds through prese	entatio	ns of one'	s Research Studies presented in a	
Rubric			1			la:			1	
				al Level		Standard Level			Unacceptable Level	
Achievem	Achievement 1			dents from o	es in a way that different fully understand	Can present on Research Studi students from a specialties can discuss it with	es in a differe under	a way that ent estand and	students from different '	
Assigne	d Depar	tment Obj	jecti	ves						
	g Metho									
Outline		presentat	This course will have lectures and exercises on fundamental approaches to written presentations, gr presentations, oral presentations, etc. in order to enhance students' abilities to express technical ma Teaching staff will offer their impressions and critiques to raise the levels of the content.							
Style		purposes,	, and	their resear	ch plans, followed	d by a question-	and-aı	nswer sess	ions for their Research Studies, its sion. In the latter half of the give presentations using slides.	
Notice		guarantee assignme have prep students	ed in ent repoared prese	classes and ports. Emph by themsel entations.	the standard self	-study time requessenting and distermined time. S	uired fo cussin Studer	or pre-stung the sume the sum the	s include the learning time dy / review, and completing maries and slides that students sected to be able to evaluate other	
Charact	eristics (of Class /		-		viii rioc be engibi	<u> </u>	- Varaaciorii		
☑ Active		<u> </u>		Aided by IC		☑ Applicable to	o Rem	note Class	☐ Instructor Professionally Experienced	
Course	Plan									
			Them				Goals	i		
		1st F	Creati Themo Resea From o oriefin	ing slides (Pa e 1 is to pre arch Studies different spe	iction to the Reservant 1, Hiraishi) sent the introduction 10 minutes so ecialties can under signment, prepara	tion to the that students rstand. After	the ba	ackground ods of one	at to be careful in communicating I, research purposes, and research Is own Research Studies to different specialties.	
		2nd C	Creati	e 1 (Introdu ing slides (Pa as above	ction to the Rese art 2, Hiraishi)	arch Studies):	backg one's	round, pu	erials to communicate the irposes, and research method of larch Studies to students from lties.	
		3rd k	Presentation of Theme 1 (Part 1, Hiraishi Kunimine) 3rd An 8-minute presentation (a bell will ring minutes) and a 10-minute Q&A with ever Students will score each other's presentat					rch methoudents	ate the background, purposes, and ad of one's own Research Studies on different specialties. Can also bout the presentations.	
2nd Semeste r	3rd Quarter			ntations (Pa as above	rt 2, Hiraishi and	Kunimine)	resea to stu	rch methoudents	ate the background, purposes, and add of one's own Research Studies on different specialties. Can also bout the presentations.	
				ntations (Pa as above	rt 3: Hiraishi and	Kunimine)	resea to stu	rch methoudents	ate the background, purposes, and of one's own Research Studies on different specialties. Can also bout the presentations.	
				ntations (Pa as above	rt 4: Hiraishi and	Kunimine)	resea to stu	rch methoudents	ate the background, purposes, and of one's own Research Studies on different specialties. Can also bout the presentations.	
				ntations (Pa as above	rt 5: Hiraishi and	Kunimine)	resea to stu	rch methoudents	ate the background, purposes, and of one's own Research Studies on different specialties. Can also bout the presentations.	
			Presentations (Part 6: Hiraishi and Kuniming Same as above				resea to stu	rch methoudents	ate the background, purposes, and of one's own Research Studies on different specialties. Can also bout the presentations.	

		9th	Theme 2 (Special slides preparation Prepare one's own review presentation	(Part 1: Kunimiń n Research Studie	e) '	Can prepare slid Studies review p	es and materials resentation.	for Research		
		10th	Each student show minutes and join everyone.	uld present Them n a 5-minute disc	e 4 within 10 cussion with	research method discussion of one	Can communicate the background, purposes, research method, experiment results, and discussion of one's own Research Studies. Can also ask questions about the presentations.			
		11th	Presentations (Pa Same as above	rt 2: Kuniminei ar	nd Hiraishi)	research method discussion of one	Can communicate the background, purposes, research method, experiment results, and discussion of one's own Research Studies. Can also ask questions about the presentations.			
	4th Quarte	12th r	Presentations (Pa Same as above	rt 3: Kunimine an	d Hiraishi)	Can communicate the background, purposes, research method, experiment results, and discussion of one's own Research Studies. Can also ask questions about the presentations.				
	13th		Presentations (Pa Same as above	rt 4: Kunimine an	d Hiraishi)	Can communicate the background, purposes, research method, experiment results, and discussion of one's own Research Studies. Can also ask questions about the presentations.				
			Presentations (Pa Same as above	rt 5: Kunimine an	d Hiraishi)	research method discussion of one	te the background, experiment rese's own Researches about the pres	últs, and Studies. Can		
		15th	Presentations (Pa Same as above	rt 6: Kunimine an	d Hiraishi)	research method discussion of one	te the background d, experiment rese's own Research ns about the pres	ults, and Studies. Can		
		16th	No final exam							
Evaluati	<u>ion Me</u>	thod and	Weight (%)							
	ŀ	Presentation	Mutual Evaluations between students	Number of questions			Others	Total		
Subtotal	6	50	30	10	0	0	0	100		
Basic Proficienc			0	0	0	0	0	0		
	Specialized Proficiency 60		30	10	0	0	0	100		
	Cross Area Proficiency 0 0			0	0	0	0	0		

Д	Akashi Co	ollege	Year	2024		Course Title	Re	esearch Studies	
Course	Informa	tion							
Course Co		6028			Course Category	/		/ Compulsory	
Class For	mat	Seminar			Credits	Schoo	I Credi	edit: 8	
Departme	ent	Mechanic Engineeri	al and Electronio	System	Student Grade	Adv. 2	2nd		
Term		Year-rour			Classes per Wee	ek 8			
Textbook					'				
	Materials								
Instructo									
(1) Can ir perspectiv (2) Can e (3) Can v	ve toward ingage in l vrite techn	nd deepen e solving prob earning and ical docume	olems. research indepe nts in English by	amine it theoretica indently and contin creating an Englis ie at the research	nuously. sh abstract of the	annual rese		creatively from a wide	
Rubric									
			Ideal Level		Standard Level		L	Jnacceptable Level	
Achievem	nent 1		Can integrate expertise, and apply it theore systematically creatively fron perspective to problems.	examine and etically, , practically, and n a wide	Can integrate an expertise, and e theoretically, sy practically, and a wide perspect solving problem	examine it stematically, creatively fro ive toward	om p	Cannot integrate and deepen expertise, and examine it heoretically, systematically, oractically, and creatively from wide perspective toward olving problems	
Achievem	nent 2		Can actively e and research i continuously.	ngage in learning ndependently and	Can engage in la research indepe continuously.	earning and ndently and	l n	Cannot engage in learning and esearch independently and ontinuously.	
Achievement 3			in English and international of	onferences by aglish abstract of	Can write techn in English by cre abstract of the a report.	eating an Eng	glish d	Cannot write technical locuments in English by reating an English abstract of the annual research report.	
			Can improve a presentation s at the review	kills by giving one	Can improve presentation skills by giving one at the review presentation.			Cannot improve presentation kills by giving one at the eview presentation.	
Assigne	d Depar	tment Ob	jectives						
Teachin	g Metho	od							
Outline		that the s	students have le also learn pract s, do not have ar	arned so far and a ical techniques for	pplying it to indiv engineering rese	idual researd arch. Resear	ch assi ch sub	rating engineering knowledge gnments of their own choice. ojects, unlike exercise unknown areas while repeating	
Style		Students	will be assigned	ill be assigned to each laboratory and receive research guidance from the supervisors.					
Notice		guaranted assignme knowledg voluntaril	ed in classes and int reports. Stud Je they have gail y and based on	d the standard self ents should procee ned from previous	-study time requi ed with research study. Specificall much as possible	ired for pre-s voluntarily a v. each rese	study / nd pro arch p	nclude the learning time review, and completing actively based on their rocess should be carried out ues given and think about	
Charact	eristics	of Class /	Division in Le	earning					
☑ Active	Learning	·	☐ Aided by I	СТ	☑ Applicable to	Remote Cla		☐ Instructor Professionally experienced	
Course	Dlan								
Course	riall	-	Theme		Ι.	Goals			
			Гheme Individual resear	ch	(paratel	y under each supervisor's	
		2nd S	Same as above			Same as abo	ve		
			Same as above			Same as abo			
	1st	4th 9	Same as above			Same as abo	ve		
	Quarter	5th S	Same as above			Same as abo	ve		
			Same as above			Same as abo			
1st Semeste			Same as above			Same as abo			
r			Same as above			Same as abo			
			Same as above			Same as abo			
			Same as above			Same as abo			
	2nd		Same as above Same as above			Same as above			
	Quarter		Same as above			Same as above Same as above			
			Same as above			Same as above Same as above			
			Same as above			Same as abo			
	1	1	45 45070						

		16th	No final exar	n						
		1st	Same as abo	ve		Same	as above			
		2nd	Same as abo	ve		Same	Same as above			
		3rd	Same as abo	ve		Same as above				
	3rd	4th	Same as abo	ve		Same	as above			
	Quarter	5th	Same as abo	ve		Same	as above			
		6th	Same as abo	ve		Same	as above			
		7th	Same as abo	ve		Same	as above			
2nd		8th	Same as abo	ve		Same	as above			
Semeste		9th	Same as abo	ve		Same	as above			
		10th	Same as abo	ve		Same				
		11th	Same as abo	ve		Same	as above			
	4th	12th	Same as abo	ve		Same	as above			
	Quarter	13th	Same as abo	ve		Same	as above			
		14th	Same as abo	me as above			as above			
		15th	Review prese	entation		Can p questi	in present one's research results and answer estions, etc.			
		16th	No final exar	n						
Evaluat	ion Meth	od and	Weight (%)							
			ch paper	Research activities	Annual researd	ch	Research publication	Total		
Subtotal	otal 40			20	20		20	100		
Basic Pro	Basic Proficiency 0			0	0		0	0		
	Specialized 40		20	20		20	100			
Cross Area Proficiency 0				0	0		0	0		

А	kashi Co	ollege	Year	2024		Course Title	Mechatro-system		
Course 1	Informa	tion							
Course Co	ode	6029			Course Categor	y Specializ	ed / Elective		
Class Forr	mat	Lecture			Credits	Academi	c Credit: 2		
Departme	ent	Engineerir		System	Student Grade	Adv. 2nd	1		
Term		First Sem	ester		Classes per We	ek 2			
Textbook Teaching									
Instructor		SEKIMOR	Daisuke						
Course	Obiectiv	es							
(1) Under (2) Under	stand the	basic knowle to fuse sen	edge and operat sors and actuato intelligent by pi	ors and can create	ensors and actua a basic system.	tors and can co	ntrol them with a computer.		
Rubric									
			Ideal Level		Standard Level		Unacceptable Level		
Achievem	ent 1		Understand the basic knowledge and operating knowledge principles of sensor and principles of			operating nsor and can control them	Do not understand the basic knowledge and operating principles of sensor and actuators and cannot control them with a computer.		
Achievem	ent 2		Understand ho and actuators accurately crea system.		Tonderstand nov	w to fuse senson and can create a			
Achievem	ent 3		Can accurately make the entire system intelligent by programming. Can make the entire system intelligent by programming. Cannot make the entire intelligent by programming.						
Assigne	d Depar	tment Obj	ectives						
Teachin	g Metho	 od							
Outline		information machinery subsysten methods explained	on engineering not class content ns: (1) sensors, will be explained	secessary for mech is based on the su (2) actuators, and I step-by-step star	natronics. In add ubject of autonor d (3) control syst ting with the ba	ition, there will mous mobile rob tems. The actua sics. Finally, the	chanical, electrical, electronic and be exercises using the actual oots and focuses on their il mechanisms and specific control idea of integrating these will be		
Style		Lectures v materials.		Il be conducted in accordance with the handouts. The course also includes exercises using robo					
Notice		guarantee	ed in classes and nt reports.	amount to 90 hou I the standard self more of classes v	-study time requ	iired for pre-stu	s include the learning time dy / review, and completing		
Charact	eristics (of Class / I	<u>Division in Le</u>	arning	.				
□ Active	Learning		☐ Aided by IO	Т	☐ Applicable to	o Remote Class	☐ Instructor Professionally Experienced		
Course I	Plan								
		Т	heme			Goals			
		1st A	n outline of mol	bile robots		robots such as	basic configurations for mobile hardware, software, and also operate an actual mobile ple program.		
		2nd M	licrocomputer co	ontrol		of microcomput systems. Also u	functions and basic configurations ers that control entire robot inderstand specific control microcomputer programming		
		3rd S	ensor principles	and control meth	ous	devices such as	principles and control methods of optical sensors, force sensors, rotary encoders, which are widely for robots.		
1st Semeste r	1st Quarter	4th I	nfrared proximit	y sensor control		by doing infrare exercises. Can	atrol circuits and interface circuits and proximity sensors control use an actual infrared proximity about how to detect objects.		
		5th R	otary encoder c	ontrol		encoder control rotary encoder	ntrol circuits, etc. by doing rotary exercises. Can use an actual to learn how to measure a motor's angular speed, etc.		
		6th A	ctuator principle	es and control met	:hods	of the main typ stepping motor	ir principles and control methods es of actuators of robots, such as s and DC motors.		
			C motor contro	(1)		Understand control circuits and interface cir by doing DC motor control exercises. Can u actual DC motor to learn driving methods for motor's forward-reverse, PWMs, etc.			

		8th	DC motor co	ntrol (2)			Under contro learn	rstand PID con ol exercises. Co how to contro	trol theory by an use an actu l a motor's sp	doing DC motor all DC motor to eed.	
		9th	DC motor co	ntrol (3)			Same	Same as above			
		10th	Position cont	rol of a mobile	robot (1)		Understand the mechanisms and kinematics of mobile robots. Also understand position control methods that use feedforward and feedback.				
		11th	Position cont	osition control of a mobile robot (2)				Can measure position accuracy through feedforward and feedback, and discuss the results through a mobile robot's position control exercises.			
	2nd Quarter	12th	Position estimation of a mobile robot				Understand dead reckoning, a practical method of estimating a mobile robot's position, and learn about position estimation methods that use an actual mobile robot.				
		13th Obstacle avoidance (1)					Learn how to guide the mobile robot to its destination while detecting and avoiding obstact using the infrared proximity sensors mounted of it.			oiding obstacles	
		14th	Obstacle avo	idance (2)			Same	as above			
		15th	Obstacle avo	idance (3)			Same as above				
		16th	Final exam								
Evaluati	on Meth	nod and	Weight (%))							
	Exar	nination	Presentation	Mutual Evaluations between students	Behavior	Portfoli	0	Other	Exercise	Total	
Subtotal	50		0	0	0	0		0	50	100	
Basic Proficienc	o 0		0	0	0	0		0	0	0	
Specialize Proficienc			0		0	50	100				
Cross Are Proficience			0	0	0	0		0	0	0	

Д	Akashi Co	ollege	Year	2024			Course Title	Computational Mechanics		
Course	Informa	tion								
Course Co	ode	6030				Course Categor	y Speciali	ized / Elective		
Class For	mat	Lecture				Credits	Academic Credit: 2			
Departme	ent	Mechani Engineer	cal and Electror ring	ic System	S	Student Grade	Adv. 2r	nd		
Term		First Ser	nester			Classes per Wee	/eek 2			
Textbook Teaching		Original	Text							
Instructo	r	KUNIMIN	NE Kanji							
Course	Objectiv	es								
(2) Can d (3) Can d (4) Can d	letermine letermine	numerical s numerical s	ifferential meth olutions for two olutions for one olutions for mo	o-dimensiona e-dimensiona	l unstead	y-state problen	ns.			
Rubric			T							
			Ideal Level			Standard Level		Unacceptable Level		
Achievem	nent 1		differential n	tand the basi nethods.	Inderstand the lifferential meth		Do not understand the basics o differential methods.			
Achievem	vement 2 Can fully determine numerical solutions for two-dimensional steady-state problems. Can determine numerical solutions for two-dimensional steady-state						o-dimensional	Cannot determine numerical solutions for two-dimensional steady-state problems.		
Achievem	nent 3		solution's for	ermine nume one-dimensi ate problems	ional s	Can determine isolutions for one insteady-state	e-dimensional	Cannot determine numerical solutions for one-dimensional unsteady-state problems.		
	Can fully determine numerical Can determi						numerical oving boundary	Cannot determine numerical solutions for moving boundary problems.		
Assiane	ed Depar	tment Ob				<u></u> μετουιστείς.				
	ng Metho									
Outline		assistand problem are typic coagulat	ce of computers s. The course w ca numerical so ion.	s. In this cour vill explain the lutions. It wil	rse, stude e basic th Il also exp	ents will be guid leory and specification and specification and specification and specification and specification and security and secu	ded through the fic ways to cale ply them to mo	present physical phenomena with the basic formula of heat conduction lculate differential methods, which oving boundary problems, such as		
Style		Engineer	ring Departmen	t and Advand hem. Studen	ced Heat ⁻	Transfer from t	the school's ad	elected for year 5) at the Mechanica dvance courses, as the study ents to meet the Course Objectives		
Notice		guarante assignme In order The eval Students	eed in classes a ent reports. to achieve the luation will be b s who miss 1/3	nd the standa goals, studer based on four or more of cl	ard self-st nts are ad assignme	tudy time requi Ivised to thorou ents and two qu	ired for pre-stud ughly pre-stud uizzes.	rs include the learning time udy / review, and completing ly and review each week's class. n.		
Charact	eristics	of Class /	Division in I	<u>_earning</u>						
☐ Active	Learning		☑ Aided by	ICT	Ū.	Applicable to	Remote Class	S ☐ Instructor Professionally Experienced		
Course	rian		Thoma			Т	Goals			
		1st	Theme Heat conductio	n oquations		(Can derive a t	hermal conduction equation of a		
		2nd	Basics of the di	· ·	 thod	(Can derive the derivatives of	rdinate system. e differential formula for the the first and second floors		
		3rd Quiz on two-dimensional steady-state problems						d mathematically. ne differential formula for two- teady-state problems and how to an do a quiz on content from Week		
1st	1st Quarter	4th	Exercise (1)			(2. Can create a p steady-state p	program for two-dimensional problems.		
Semeste r	5th Exercise (2)						e numerical solutions using the ted in Week 4.			
		6th	One-dimension	al unsteady-	state prol	ploms (1)	Understand th	ne solution by the forward ethod and its algorithm.		
		7th	One-dimension	al unsteady-	state prol	(2)	Can understan	nd the solution by reverse ethod and its algorithm.		
8th			Exercise (3)				Can create programs for one-dimensional			
	8th Exercise (3) 2nd 9th Exercise (4)						unsteady-state problems. Can determine numerical solutions using the program created in Week 8.			

	10th	Moving boundary	y problem		boundary c	onditions, and c	tions and initial and an find an approximate n problems with phase		
	11th	Quiz on the hand	dling moving	boundary surfaces	as a typical surfaces the	Understand the fixed temperature point method as a typical example of handling boundary surfaces that may move over time. Can do a quiz on content from Week 10.			
	12th	Handling moving	j boundary si	urfaces (2)	Understand point meth		of a fixed temperature		
	13th	Exercise (5)			Can create point method	Can create a program using a fixed temperature point method.			
	14th	Exercise (6)				Can create a program using a fixed temperature point method.			
	15th	Exercise (7)			Can determ program cr	Can determine numerical solutions using the program created in Weeks 13 and 14.			
	16th	No final exam			0	0			
Evaluation	Method and	l Weight (%)							
	Report	Short Tests					Total		
Subtotal	70	30	0	0	0	0	100		
Basic Proficiency	0	0	0	0	0	0	0		
Specialized Proficiency	70	30	0	0	0	0	100		
Cross Area Proficiency	0	0	0	0	0	0	0		

А	kashi Co	llege	Year	2024		С	Course Title	Energy Technology II
Course :	Informat	ion		<u>.</u>		•		
Course Co	ode	6031			Course Catego	ry	Specialize	ed / Elective
Class Forr	nat	Lecture			Credits		Academic	Credit: 2
Departme	nt	Enginee		c System	Student Grade		Adv. 2nd	
Term		First Ser	nester		Classes per We	eek	2	
Textbook Teaching								
Instructor		TANAKA	Seiichi					
The cours (1) Can re (2) Under (3) Under To achieve (a) Solve (b) Descri performar	ecognize fustand and stand the these goeach week be the app	es are as fouture problecan explain basic issue als, studer s's exercise propriate expresses als.	ems and discuss n the principles of s of each thermonts will need to do guestions and re	of structural and en o-fluid machine and o the following self esearch the relevar lts and consideration	ergy conversion plan, conduct, study: t topics to enha	of the and ev ance ur	ermal engir valuate per nderstandi	support livelihoods. nes and fluid machinery. formance tests. ng. prepare experimental reports for
Rubric								
			Ideal Level		Standard Leve			Unacceptable Level
Achievem	ent 1		Can accuratel problems and for energy contechnologies to livelihoods.		Can recognize and discuss me energy convers that support liv	easures	s for chnologies	Cannot recognize future problems and discuss measures for energy conversion technologies that support livelihoods.
Achievem	ent 2		logically expla structural and conversion of	Accurately understand and logically explain the principles of structural and energy conversion of thermal engines and fluid machinery.			ain the al and thermal chinery.	Do not understand and cannot explain the principles of structural and energy conversion of thermal engines and fluid machinery.
Achievem	ent 3		issues of each	can properly plan, evaluate	Understand the each thermo-fl can plan, cond performance to	uid ma uct, ar	achine and	
Assigne	d Depart	ment Ob	ojectives	ectives				
	g Metho							
Outline		Students learn the specifica practical	e approaches to p ally, they will und I use and learn th	performance calcule erstand the structu	ation and experi Ires and principl erformance eval	imenta es of t luation	l evaluatio hermal en	technologies and will practically n that designing requires. More gines and fluid machinery in lese things, students will actually
Style		each uni following student	it and two labs. g the questions a is having difficult	In order to achieve	the goals, stud ork in class as w nould go back to	ents shell as to the b	nould ensu	e will be assignment exercises for re their understanding by ses assigned in each class. If a ley don't understand, they should
Notice		Heat Tra not mea students Students based or first clas This cou classes a Students	ansfer. Therefore in that students was should come an so need to submit in the results of the second of the second of the standard in the standard in who miss 1/3 comes who miss 1/3 comes in the standard in	, keep the textbool who have not taker and taker and taker as par an appared to the planned experim amount to 90 houself-study time record more of classes were with the planned experiments of the text and the text	s for those sub, those courses e faculty as mu- t of a prerequisment. Other deta rs in total. Thes	jects a are un ch as p ite for illed ev se hour cudy / I	t hand and able to tak cossible. earning the raluation of the include the sinclude	modynamics, Fluid Mechanics, and I review them. However, this does to this course. In these cases, e credit. They will be evaluated riteria will be explained during the the learning time guaranteed in d completing assignment reports. rade.
Charact	eristics c	of Class /	<u>Division in Lo</u>	earning	1			
□ Active	ctive Learning						ote Class	☐ Instructor Professionally Experienced
Course	Plan							
220.00			Theme			Goals		
		1st	Energy conversion	on		Under		explain types of energy pecially thermal engine
1st Semeste	1st	2nd	Cycle and therm (1)	al efficiency of the	mal engines	Under	stand an a	air theory cycle hypothesis and ermal efficiency of a cycle for a engine.
r	Quarter	3rd	Cycle and therm (2)	al efficiency of the	mal engines	Can ca a typi differe	e thermal efficiency of a cycle for all engine and explain the een the thermal efficiency required cycle, after comparing their	

4tl	:h	Analysis and measurer performance (1)	ment of thermal engine	lindicated power and dia	efficiency that are required		
5tl	:h	Analysis and measurer performance (2)	ment of thermal engine	Understand and can app methods of measuring p accounting that are requ thermal engine's perform	uired to evaluate a		
6tl	:h	Performance evaluation of thermal engines (Lab 1)		engine that is in line wit members of the class in	ove performance or an internal combustion hobjectives presented by order to gain a hands-on or the manufacture of the manufactu		
7tl	:h	Performance evaluatio 1)	n of thermal engines (Lab	Can conduct the perform experiment for an intermal was planned the previous into a report. (Report as	nal combustion engine that us week, and compile it		
8tl	:h	Energy conversion in f	luid machinery	Can introduce fluid mac water vehicles, windmill and explain their princip	s, etc., and understand		
9tl	:h	Performance and effici	ency of turbo machines (1)	Understand and can app types and their general	Understand and can apply the turbo machines types and their general theory.		
10	Oth	Performance and effici	ency of turbo machines (2)	Understand and can exp specific phenomena of f	plain the operation and the luid machinery.		
11	1th	Analysis and measurer performance	ment of fluid machinery	Understand and can app specific speed, performa laws that are required to engine's performance.	oly information such as the ance curve, and similarity o evaluate a thermal		
2nd Quarter	2th	Performance evaluatio	n of fluid machinery (Lab 2	Can plan a pump perfor experiment that is in lin presented by members gain a hands-on unders learned up to week 11.	e with objectives of the class in order to		
13	3th	Performance evaluatio	n of fluid machinery (Lab 2	Can conduct the perform experiment for an interm was planned the previous into a report. (Report as	nal combustion engine that us week, and compile it		
14	4th	Principles and power g cells (1)	eneration systems of fuel	Understand and can exp types of fuel cells and the	plain the principles and neir systems.		
15	ōth	Principles and power g cells (2)	eneration systems of fuel	Understand fuel cells' the balance and can calcular efficiency of real ones. (ermal and material te the theoretical		
16	5th	Final exam					
Evaluation Method	d and V	Weight (%)					
	Exe	rcise	Report	Final exam	Total		
Subtotal	20		40	40	100		
Basic Proficiency	0		0	0	0		
Specialized Proficiency	20		40	40	100		
Cross Area Proficiency	0		0	0	0		

(2) Underst Rubric Achievemer	de at t and/or laterials Objective atically ur tand the e	Lecture Mechanical a Engineering Second Sem Material dist MORISHITA Ses Address of various	nester tribution Tomohiro properties of fous factors on r	System Fracture phenome material strength	Course Categor Credits Student Grade Classes per We		i '	red / Elective ic Credit: 2
Class Forma Department Term Textbook a Teaching M Instructor Course O (1) Systema (2) Underst Rubric Achievemer	at t and/or laterials bjective atically ur tand the e	Lecture Mechanical a Engineering Second Sem Material dist MORISHITA es Inderstand the effects of vario	nester tribution Tomohiro properties of fous factors on i	racture phenome	Credits Student Grade		Academi Adv. 2nd	ic Credit: 2
Department Term Textbook a Teaching M Instructor Course O (1) Systema (2) Underst Rubric Achievemer	and/or laterials Objective atically ur tand the e	Mechanical a Engineering Second Sem Material dist MORISHITA es anderstand the effects of various I	nester tribution Tomohiro properties of fous factors on i	racture phenome	Student Grade	eek	Adv. 2nd	
Term Textbook a Teaching M Instructor Course O (1) Systema (2) Underst Rubric Achievemer	and/or laterials Objective atically ur tand the e	Engineering Second Sem Material dist MORISHITA PS Inderstand the effects of various	nester tribution Tomohiro properties of fous factors on i	racture phenome		eek		1
Textbook at Teaching M Instructor Course O (1) Systema (2) Underst Rubric Achievemen	Descrive atically ur tand the e	Material dist MORISHITA PS Inderstand the effects of various	tribution Tomohiro properties of fous factors on i	racture phenome	Classes per We	eek	2	
Teaching M Instructor Course O (1) Systema (2) Underst Rubric Achievemer	Descrive atically ur tand the e	MORISHITA es nderstand the effects of vario	Tomohiro properties of fous factors on i	racture phenome				
Course O (1) Systema (2) Underst Rubric Achievemer	atically ur tand the e	es nderstand the effects of vario	properties of fous factors on i	racture phenome				
(1) Systema (2) Underst Rubric Achievemer	atically ur tand the e	nderstand the effects of vario	ous factors on i	racture phenome				
Achievemer Achievemer	nt 1	C			enon.			
Achievemer	nt 1	C						
Achievemer	nt 1		Ideal Level		Standard Level			Unacceptable Level
		f	Can specifically fracture phenor metallic materia	menon of	Can explain the phenomenon o materials.	e fractu of meta	ire Ilic	Cannot explain with an example of the fracture phenomenon of metallic materials.
Accianad	nt 3	le	Can specifically effects of variou material streng	us factors on	Can explain the various factors strength.			Cannot explain the effects of various factors on material strength.
Assigned	Depart	ment Objec	ctives					
Teaching	Method							
Outline		deepen und	erstanding for	microscopic struc mechanical stude nphasis on exper	ents and to be al	us facto ole to e	ors on vai expand ho	rious strength properties. To orizons beyond specialty for electric
Style		A combinati understandi	on of lectures,	experiments, and	d presentation/d	iscussi	on forma	ts will be used to deepen
Notice		Students are course's cor in classes ar reports.	e expected to intent will amound the standard	ınt to 90 hours of	study in total. T required for pre-	These h -study	ours incl / review,	ng to the lecture content. This ude the learning time guaranteed and completing assignment
Character	ristics o	•	ivision in Lea					
☐ Active L	earning		☐ Aided by IC	T	☑ Applicable to a positive to a positiv	o Remo	ote Class	☐ Instructor Professionally Experienced
Course Pl	ian	T				C1-		
			eme roduction : Stre	ength and rigidity	,			sic concepts and examples about gidity of materials.
		2nd Sta	tic strength (1)) Sliding and plas	tic deformation	Can ex		e sliding and plastic deformation of
			tic strength (2)) How to strength	nen metal	Can ex		w to strengthen metal materials
3	Brd	4th Sta	itic strength (3)) Types of fractur	es in metal	Can ex	kplain typ	pes of fractures in metal materials echanisms.
	Duarter		esentation (1)			Can ex		causes of some examples of
		6th Ter	nsile test (1) S ds of materials	tress-strain diagr	rams for some	Can ex diagra	cplain the	e properties of stress-strain me kinds of materials.
		7th Ter	nsile test (2) Br terials	rittle fracture of n	otched	Can ex fractu	cplain the	e effect of notch on brittle like tile materials.
2nd Semeste r		8th Fati	igue (1) Fatigu gram	e test methods a	nd S-N	Can ex	kplain the	e basics of fatigue.
			igue (2) Fatigi pagation	ue process and cr	ack		kplain the gation.	e characteristics of fatigue crack
		10th Hig		strength and env	vironmental	Can ex		ep deformation, creep fracture and
		11th Fra	cture mechanic	CS		Can ex	cplain the intensity	e stress fields at crack tips, and the factor.
	lth Quarter	12th Sta	tistical propert	ies of material str	rength	Can ex streng		e statistical properties of material
		13th Pre	esentation (2)			Can ex destru	cplain the	e causes of some examples of idents.
		14th Ber	nding test			Can ex	kplain the	e fully plastic bending moment.
		15th Tor	sion test			Can ex	kplain the	e fully plastic torsional moment.
		16th						
<u>Evaluatio</u>	n Metho	od and Wei	ght (%)					
				sentation/Discussi	ion		Total	
Subtotal		-	100				100	

Basic Proficiency	40	40
Specialized Proficiency	40	40
Cross Area Proficiency	20	20

А	kashi Co	ollege	Year	2024		C	Course Title	Optoelectronics Devices
Course	Informa	tion		1				
Course Co	ode	6033			Course Catego	ry	Specializ	ed / Elective
Class Forr	mat	Lecture			Credits		Academi	c Credit: 2
Departme	ent	Mechanio	cal and Electronic ing	c System	Student Grade		Adv. 2nd	i
Term		First Sen	nester		Classes per We	eek	2	
Textbook								
Teaching Instructor		SUYAMA	Taikei					
	Objectiv		· · · · · · · · · · · · · · · · · · ·					
1) Can ex the basis 2) Unders display de	plain the to for optical stand the cevices and enstruct an	pasics of qu devices. operating pr can explain	rinciples and cha	racteristics of vari	ous light emitting	g devic	ces, photo	n optical waves and electrons as sensitive devices, and solid-state nology from one's field of
Rubric								
			Ideal Level		Standard Level			Unacceptable Level
Achievem	ent 1			nd can apply the eristics of light, hanics, and rs.	Understand the characteristics mechanics, and semiconductor	of ligh d		Do not understand the basic characteristics of light, quantum mechanics, and semiconductors.
Achievem	ent 2		Understand the between light electrons and problems.	waves and	Understand the between light velectrons.			Do not understand the interaction between light waves and electrons.
Achievem	ent 3		and application devices such a	ne basic principles ns of optical as optical .EDs, and lasers.	Understand the of optical wavegulasers.	es suc	h as	Do not understand the basic principles of optical devices such as optical waveguides, LEDs, and lasers.
			detail photose	s, optical fibers, unication, optical and medical optical power	Understand ph display devices optical commu measurement applications, of applications, et	s, optic nicatio and ma ptical p	cal fibers, on, optical edical	Do not understand photosensitive and display devices, optical fibers, optical communication, optical measurement and medical applications, optical power applications, etc.
		tment Ob	jectives					
Outline	g Metho	Optical e engineer a wide ra advanced second h	ing. It has helpe ange of content. d significantly. Ir aalf will explain v	d diversify and im Optical devices m this course, the f	prove the performake up the core of irst half will focutions used for options.	mance devices s on th ical info	of electro s within the ne basics a	engineering, and electronics onic engineering functions and has nis, and this technology has and theory of optical devices. The transmission, optical recording,
Style		Students The ove	s who miss 1/3 o rall evaluation w	r more of classes	will not be eligibl on periodic exar	le for e	ie minimu	m score for a pass will be 60%.
Notice		This cou guarante assignme Students	urse's content wi eed in classes and ent reports. It is who miss 1/3 o	ll amount to 90 ho d the standard sel recommended tha r more of classes	ours of study in to f-study time requal at students have	otal. The state of	hese hour or pre-stu ered subje	s include the learning time dy / review, and completing cts related to electronic properties.
Charact	eristics (of Class /	Division in Le	earning				Tostwisten Duefeesienelli.
□ Active	Learning		☑ Aided by I	CT	☑ Applicable t	o Rem	ote Class	☐ Instructor Professionally Experienced
C	DI							
Course	ridN 	<u> </u>	Theme			Goala		
			Theme Optical electronic	cs and optical dev	ices	Goals		
		1st	Optical electronic characteristic ha Telecommunicat engineering, and	cs is a technology s three sides: ions engineering, I light energy. Bas n of optical device	whose imaging ed on this,	Optica Under	al electron rstand the	ics and optical devices form of optical electronics.
1st Semeste 1st Quarter 2nd		2nd	reflection, interfection, inte	properties of ligh erence, diffraction seen learned so fa	, polarization,	Under	rstand the	fundamental properties of light.
3rd			Describe the bac development, th waves of matter Schrödinger equ make up the the	c.) that have been learned so far in physics, etc. sics of quantum mechanics escribe the background of quantum mechanics velopment, the dual nature of particles and aves of matter, the wave equation of the hrödinger equation, and wave functions, which ake up the theoretical background of quantum echanics required to understand the interaction				basics of quantum mechanics.

power matching of light propagation and bending lemission), power matching of light propagation loss, power matching conditions for light and bending loss, power matching conditions for										
Sh Describe the electrical properties of semiconductors, which form the basis of optical wave and electrons. Think about a method of quantum mechanical representation of the interaction between light waves and electrons. Think about a method of quantum mechanical representation of the interaction between light waves and electrons. Think about a method of quantum mechanical representation of the interaction between light according to the interaction between light waves and electrons. The proposal part that indicates the according to the interaction between light waves and electrons (electron transition and between light waves and electrons (electron transition and between light waves and electrons (electron transition and between light waves and electrons). The proposal changes in photon and electron density based on the analysis of the light week. Think about the polarization of the multi-level system, based on this. Photoelectric waveguides based on the analysis of the light week. Think about the polarization for the analysis of the light propagation, light gettering endities for electron the polarization and proposal pr			4th	Materials absorb a to interactions be Think phenomeno	and emit light. The tween electrons in Togically about light	nis is mainly due n substances.	junderstand light	absorption an	d emission in	
waves and electrons. Think about a method of quantum mechanical Think about a method of quantum mechanical Think about a method of quantum theory of the interaction factor of a material (the real part that indicates the accumulation of energy and the imaginary part cemission) by the second-order system of approximation using a density matrix. Quantum theory of the interaction between light waves and electrons. Committed emission in presenting the percentage of temporal changes in photon and the percentage of temporal changes in			5th	Describe the elect semiconductors, v	rical properties o	f			erties of	
waves and electrons (electron transition and stimulated emission). Perspecienting the Derive the rate equation proposed in the Derive the rate equation of the ministriction process from the proton and electron density based on the analysis of the light wave amplification process from the previous week. Think about the polarization of the multilevel system, based on this. Photoelectric waveguides Using mainly light approximation for the analysis of photoelectric waveguide. Stimulator waveguide mode, equivalent refractive index, containment coefficient, power matching of light propagation, all perspectives and buster angle and bending loss. power matching of light propagation and bending loss, power matching of light propagation and buster angle and bending loss. power matching of light propagation and bending loss, power matching of light propagation and bending loss. power matching of light propagation and bending loss, power matching of light propagation and bending loss. power matching of light propagation and bending loss, power matching of light propagation, and bending loss, power matching and bending loss, power matching and bending loss, p			6th	waves and electron Think about a me representation of and electrons. De material (the real accumulation of ethat represents all emission) by the second that the represents all emission by the second that represents all emission is all the represents all the representations are represented all the repres	ons thod of quantum the interaction be rive the polarizati part that indicate nergy and the im psorption and stir second-order syst	mechanical etween light ion factor of a es the laginary part nulated tem				
Using mainly light approximation for the analysis of photoelectric waveguide, describe topics such as an optical waveguide's basic properties (total reflection, waveguide mode, equivalent refractive index, containment coefficient, power matchin of the propagation and bending of light propagation, mode matching conditions, and bluster angle and bending loss, power matching conditions for light propagation, mode matching conditions, and bluster angle and bending loss. Periodic structures and light concentration and projection Explain periodic structures and photonic crystals. Understand light concentration and projection. Periodic structures and photonic crystals. Understand projection Explain periodic structures and photonic crystals, and photonic crystals, and light concentration and projection. Potical simulator Light emitting diodes Describe the structure, production methods, and Describe the structure, production methods, and Describe the structure problems. Part of the important light emitting devices. Explain its light emitting characteristics and features and think about its current problems. Semiconductor lasers Explain the properties of semiconductor lasers as a light sources and determine an oscillation threshold, optical output, oscillation wavelength, amplification gain, and so on. Describe the structure, type, emission characteristics, etc. of semiconductor lasers (LD). Photosensitive and display devices Describe the structure, properties, and features of photosensitive devices such as photodetectors, photodiodes, solar cells, etc. Describe display devices of photosensitive devices such as photodetectors, photodiodes, solar cells, etc. Describe prolical fiber and device bonding, optical circuit elements, optical ploarizers, etc. Optical fiber lines and optical components Describe optical fiber and device bonding, optical circuit elements, optical ploarizers, etc. Final exam Evaluation Method and Weight (%) Examination Presentation Presentation Presentation Presentation Presentation Prese			7th	waves and electrostimulated emission Derive the rate expercentage of ten electron density by wave amplification week. Think about	ons (electron tran on) quation represent nporal changes in ased on the anal n process from th t the polarization	sition and ing the photon and ysis of the light previous				
Periodic structures and light concentration and projection is plain periodic structures and photonic crystals. Understand periodic structures and photonic crystals. Understand light concentration and projection. 10th Optical simulator Light emitting diodes Describe the structure, production methods, and materials of light emitting diodes (LEDs), one of the important light emitting characteristics and features and think about its current problems. Semiconductor lasers Explain the properties of semiconductor lasers as a light sources and determine an oscillation threshold, optical output, oscillation wavelength, amplification gain, and so on. Describe the structure, type, emission characteristics, etc. of semiconductor lasers (LD). Photosensitive and display devices Describe the structure, type, emission characteristics, etc. of photoensitive devices outpass photodetectors, photodiodes, solar cells, etc. 13th Optical fiber lines and optical components Describe optical fiber and device bonding, optical circuit elements, optical polarizers, etc. 15th Applications of optical devices 16th Final exam Evaluation Method and Weight (%) Examination Presentation Mutual Evaluations between students Subtotal 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			8th	Using mainly light of photoelectric was an optical waw reflection, waveguindex, containmer light propagation, power matching closs, power match propagation, mod	approximation for aveguide, describeguide's basic pro- lide mode, equivant coefficient, powallight gathering a fight propagatic onditions for matching conditions for matching condi	pe topics such operties (total alent refractive wer matching of and bending r light	Using mainly light approximation for the analysis of photoelectric waveguide, understand topics such as an optical waveguide's basic properties (total reflection, waveguide mode, equivalent refractive index, containment coefficient, power matching of light propagation, light gathering and emission), power matching of light propagation and bending loss, power matching conditions for light propagation, mode matching conditions, and			
Light emitting diodes Describe the structure, production methods, and materials of light emitting diodes (LEDs), one of the important light emitting devices. Explain its light emitting draaracteristics and features and think about its current problems. Semiconductor lasers Explain the properties of semiconductor lasers as a light sources and determine an oscillation threshold, optical output, oscillation wavelength, amplification gain, and so on. Describe the structure, type, emission characteristics, etc. of semiconductor lasers (LD). Photosensitive and display devices Describe the structure, properties, and features of photosensitive devices such as photodetectors, photodiodes, solar cells, etc. Describe display devices with a focus on LCDs. Optical fiber lines and optical components Describe optical fiber and device bonding, optical circuit elements, optical polarizers, etc. 15th Applications of optical devices Describe optical fiber and device bonding, optical circuit elements, optical polarizers, etc. 15th Applications of optical devices Evaluation Method and Weight (%) Examination Presentation Mutual Evaluations Describe display Evaluation Behavior Subtotal 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			9th	Periodic structure projection Explain periodic st	s and light conce	otonic crystals.	Understand period concentration and and photonic cry	odic structures	, light periodic structures	
Describe the structure, production methods, and materials of light emitting diodes (LEDs), one of the important light emitting devices. Explain its light emitting characteristics and features and think about its current problems. Semiconductor lasers Explain the properties of semiconductor lasers as a light sources and determine an oscillation wavelength, amplification gain, and so on. Describe the structure, type, emission characteristics, etc. of semiconductor lasers (LD). Photosensitive and display devices Describe the structure, properties, and features of photosensitive devices such as photodetectors, photodiodes, solar cells, etc. Describe display devices with a focus on LCDs. Optical fiber lines and optical components Describe optical fiber and device bonding, optical circuit elements, optical polarizers, etc. 15th Applications of optical devices Understand the principles of light emitting diodes (LDC) and lines and optical optical services. In the principles of semiconductor lasers. Understand the principles of semiconductor lasers as a light sources and described the principles of semiconductor lasers. Understand the principles			10th			, ₁ , . <u>J</u>	i	to use the Opt	tical simulator	
Explain the properties of semiconductor lasers as a light sources and determine an oscillation wavelength, amplification gain, and so on. Describe the structure, type, emission characteristics, etc. of semiconductor lasers (LD). Photosensitive and display devices Describe the structure, type, emission characteristics, etc. of semiconductor lasers (LD). Photosensitive devices such as photodetectors, photodiodes, solar cells, etc. Describe display devices with a focus on LCDs. 13th			11th	Describe the structure materials of light the important light light emitting chains	cture, production emitting diodes (at emitting device racteristics and fe	s. Explain its	Understand the p	principles of lig	ht emitting diodes.	
Photosensitive and display devices Describe the structure, properties, and features of photosensitive devices such as photodetectors, photodiodes, solar cells, etc. Describe display devices with a focus on LCDs. 14th Optical fiber lines and optical components Describe optical fiber and device bonding, optical circuit elements, optical polarizers, etc. 15th Applications of optical devices 16th Final exam Final exam Evaluation Method and Weight (%) Examination Presentation Mutual Evaluations between students Subtotal 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			- 12th	Explain the prope a light sources an threshold, optical amplification gain structure, type, el	rties of semicond d determine an o output, oscillation , and so on. Desc mission character	scillation n wavelength, cribe the		principles of se	emiconductor	
14th Describe optical fiber and device bonding, optical optical circuit elements, optical polarizers, etc. 15th Applications of optical devices Understand the applications of optical devices. 16th Final exam Final exam			13th	Photosensitive and Describe the structure photosensitive desphotodiodes, sola	d display devices cture, properties, vices such as pho r cells, etc. Descr	todetectors,	features of photodetectors, photodiodes, solar			
Total			14th	Describe optical fi	ber and device be	onding, optical	Understand optic optical circuit ele	cal fiber and de ements, optical	evice bonding, polarizers, etc.	
Evaluation Method and Weight (%) Examination Presentation Wutual Evaluations between students Subtotal 100 0 0 0 0 0 0 0 0 100 Basic Proficiency 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					tical devices			applications of	optical devices.	
Examination Presentation Mutual Evaluations between students Behavior Portfolio Exercise Total Subtotal 100 0 0 0 0 0 100 Basic Proficiency 0 0 0 0 0 0 0 Specialized Proficiency 100 0 0 0 0 0 100 Cross Area 0 0 0 0 0 0 0 0							Final exam			
Examination Presentation Evaluations between students Behavior Portfolio Exercise Total Subtotal 100 0 0 0 0 0 100 Basic Proficiency 0 0 0 0 0 0 0 Specialized Proficiency 100 0 0 0 0 0 100 Cross Area 0 0 0 0 0 0 0 0	∟valuatio	on Me	tnod and	vveignt (%)	Mutual	Τ				
Basic Proficiency 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 100 0 100 0		Examination		Presentation	Evaluations between	Behavior	Portfolio	Exercise	Total	
Proficiency 0 0 0 0 0 0 Specialized Proficiency 100 0 0 0 0 100 Cross Area 0 0 0 0 0 0 0		:	100	0	0	0	0	0	100	
Proficiency 100 0 0 0 100 Cross Area 0 0 0 0 0 0 0 0	Basic Proficiency	, ()	0	0	0	0	0	0	
			100	0	0	0	0	0	100	
<u> </u>)	0	0	0	0	0	0	

А	kashi Co	ollege	Year	2024			ourse Fitle	Algorithms	
Course 1	Informa	tion					itic		
Course Co		6034			Course Categor	ry	Specialize	d / Elective	
Class Forr	nat	Lecture			Credits		Academic	Credit: 2	
Departme	nt	Mechanic Engineer	al and Electronic	System	Student Grade		Adv. 2nd		
Term		Second S			Classes per We	eek	2		
Textbook Teaching									
Instructor		HAMADA	Yukihiro						
Course									
[2] Can Underst [3] Algo [4] Algo [5] Algo [6] Algo	formulate and the all prithms the prithms to prithms for the prithms for prithms for the prith	real proble gorithms lise at constitute explore gra solving sho solving ma	ms on graphs. Ited below and the a minimum spa	em					
Rubric									
	Ideal Level Standard Level Unacceptable Level								
Achievem	ent 1		Can accurately computational orders, lists, s graphs, and tr	complexity, tacks, queues,	Can explain cor complexity, ord queues, graphs	ders, list	ts, stacks,	Cannot explain computational complexity, orders, lists, stacks, queues, graphs, and trees.	
Achievem	ent 2		Can accurately problem for de meeting dates committees.	etermining the	Can formulate a determining the of various comi	e meeti	ng dates	Cannot formulate a problem for determining the meeting dates of various committees.	
Achievem	ent 3		Can accurately and Prim's alg time complexi	y explain Kruskal's orithms and their ties.	Can explain Kruskal's and Prim's algorithms and their time complexities.			Cannot explain Kruskal's and Prim's algorithms and their time complexities.	
Achievem	ent 4				Can explain depth-first search and breadth-first search algorithms and their time complexities.			Cannot explain depth-first search and breadth-first search algorithms and their time complexities.	
Achievem	ent 5		Can accurately Dijkstra's, Bell Floyd's algorit time complexi	lman-Ford, and hms and their	Can explain Dijkstra's, Bellmar Ford, and Floyd's algorithms and their time complexities.			Cannot explain Dijkstra's, Bellman-Ford, and Floyd's algorithms and their time complexities.	
Achievem	ent 6				nds-Karp, and relabel algorithms and			Cannot explain the Ford- Fulkerson, Edmonds-Karp, and Push-relabel algorithms and their time complexities.	
Achievem	ent 7		Can accurately Knuth-Morris- Moore algorith complexities.	Pratt and Boyer-	Can explain the Knuth-Morris- Pratt and Boyer-Moore algorithms and their time complexities.			Cannot explain the Knuth- Morris-Pratt and Boyer-Moore algorithms and their time complexities.	
Assigne	d Depar	tment Ob	jectives						
Teachin	g Metho								
Outline		Graphs a "relations problem Strings a	re defined as an ships" or "conned as a graph probl re one of the mo	ctions" between "the em and get the so	rtex set and edg nings" in real-wo lution for it by so of data handled	ge set, a orld prol olving it	and are oft blems. It i on a gran	ns. en used to represent the s possible to formulate a real oh. tudents will learn about efficient	
Style				ecture style. All slid					
Notice		guarante assignme taking th	ed in classes and ent reports. It is is course.	d the standard self	-study time requ students to have	uired for e maste	r pre-study ered progra	nclude the learning time y / review, and completing amming in C language before	
Charact	eristics o		Division in Le						
☐ Active	Learning		☑ Aided by IO			o Remo	te Class	☐ Instructor Professionally Experienced	
Course I	Plan								
		-	Theme			Goals			
		1st I	Basic knowledge	of algorithms		Can ex	plain algor exity, and	rithms, computational	
		2nd I	Basic data struct	ure				stacks, queues, and heaps.	
2nd Semeste r	3rd Quarter	2rd I		e real-world proble	ems as graph Can explain graphs and trees. Can for problem for determining the meeting			hs and trees. Can formulate a	
		4th (Algorithms that or tree algorithm 1	constitute a minim /2	um spanning	Can explain Kruskal's algorithm, set operation algorithms and their time complexities.			

		5th	Algorithms that co	onstitute a minim	num spanning	Can explain Prir complexity.	n's algorithm and	d its time	
		6th	Algorithms to exp	lore graphs			th-first search and their time		
		7th	Algorithms for sol 1/2	ving shortest pat	th problems	Can explain Dijkstra's algorithm for finding the shortest path from a single vertex and its time complexity.			
		8th	Midterm exam The exam's scope 6.	will be content t	from weeks 1 to				
		9th	Algorithms for sol 2/2	ving shortest pat	th problems	Can explain the Bellman-Ford algorithm for the shortest path from a single vertex and the Floyd algorithm for the shortest path between all vertices. Can also explain their time complexities.			
		10th	Algorithms for sol 1/2	ving maximum f	low problems	Can explain the Karp algorithms	Ford-Fulkerson a and their time o	and Edmonds- complexities.	
		11th	Algorithms for sol 2/2	ving maximum f	low problems	Can explain the Push-relabel algorithm and its time complexity.			
	4th Quarte	r 12th	Algorithms for str	ing pattern matc	hing 1/3	Can explain the its time complex		att algorithm and	
		13th	Algorithms for str	ing pattern matc	hing 2/3	Can explain the (acceleration ide	Boyer-Moore algea 1) and its time	orithm complexity.	
		14th	Algorithms for string pattern matching 3/3			Can explain the (acceleration ide	Boyer-Moore algea 2) and its time	orithm complexity.	
		15th	From algorithm th	neory to engineer	ring	Can explain "alg bridges the gap reality.	orithm engineer between algoritl	ing," which nm theory and	
		16th	Final exam						
Evaluati	on Me	thod and	Weight (%)						
	I	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total	
Subtotal		100	0	0	0	0	0	100	
Basic Proficienc	y	0	0	0	0	0	0	0	
	Specialized 100 Proficiency	100	0	0	0	0	0	100	
Cross Are Proficience	oss Area		0	0	0	0	0	0	

Akashi College		Year 2024		Cour		Advanced Electronic Circuit			
Course	Informa	tion							
Course Co	ode	6035			Course Categor	y Spe	ecialized	d / Elective	
Class Forr	mat	Lecture			Credits	Aca	demic	Credit: 2	
Departme	ent	Mechanica Engineerir	al and Electronic	System	Student Grade	Adv	/. 2nd		
Term		First Seme			Classes per We	ek 2			
Textbook									
Teaching Instructor		TERASAW	'A Shinichi						
	Objectiv		7 Similarii						
This cours understan	se will tead nd the CMO nd the road n taken in	ch VLSI devid OS logic circu	uit, apply it to co	mputer and contro	ol circuits, learn	the feature	es of va	ne objective is to correctly rious memory LSIs, and e challenges and measures that mption and reliability	
Rubric									
			Ideal Level		Standard Level			Unacceptable Level	
Achievem	ent 1		Fully understal and operation techniques.	nd circuit design verification	Understand circle operation verification verification verification verifications.		and	Do not understand circuit design and operation verification techniques.	
Achievem	ent 2		Fully understar for low power high speed.	nd technologies consumption and	Understand tec power consump speed.	hnologies (otion and h	for low nigh	Do not understand technologies for low power consumption and high speed.	
Achievem	ent 3		Fully understar memory circuit such as SRAM, Flash.		Understand hig memory circuit such as SRAM, Flash.	technologi	ies d	Do not understand high-density memory circuit technologies such as SRAM, DRAM, and Flash.	
Assigne	d Depar	tment Obj	ectives						
Teachin	g Metho	d							
Outline		consumpt high-perfo In this cou performar	ion, and higher ormance design urse, lessons wil nce design electi	integration. The co techniques for ach Il be conducted in a	ourse will lecture lieving them. a lecture style fo	e on circuit ormat. Stud	and ar dents w	ner speed, lower power chitecture technologies regarding will be introduced to the high- ch practical experience in	
Style		exams, ar 1) Unders 2) Unders	nd evaluation wi stand circuit desi stand technologi	ecture and exercis Il be based on the ign and operationa es for low power c ty memory circuit	submitted assig I verification tec onsumption and	nment. hnologies. high spee	d.	ers 1) to 3). There will be no	
Notice		This cours guarantee assignmen	se's content will ed in classes and nt reports.	amount to 90 hou	rs of study in to study time requ	tal. These iired for pr	hours ii e-study	nclude the learning time // review, and completing	
Charact	eristics (•	Division in Le		viii riot be eligible	e ioi evalu	ation.		
		or Class / I				- D	21	☐ Instructor Professionally	
☐ Active	Learning		☑ Aided by IC	, l 	☑ Applicable to	o Remote (Liass	Experienced	
Course	Plan	I I-	-1		1	<u> </u>			
		1st E	erformance VLS	re overview for Ad	·	performan Understan	ce VLS d the le	ecture overview for Advanced	
		n 2nd E	MOS/pMOS tran xplain nMOS/pM	nsistors and CMOS 10S transistor and	inverters nMOS/I CMOS inverter Unders		ostronic Circuits. OS/pMOS transistors and CMOS inverters derstand nMOS/pMOS transistor and CMOS		
		2rd C	peration. MOS logic circui xplain the vario			inverter op CMOS logi	oeratior c circui	ı.	
1st		3rd C 4th E	MOS logic circui xplain the varion combinational cin xplain the comb	its us CMOS logic circ cuits using CMOS inational circuits tl	uits.	inverter op CMOS logi Understan Combinati Understan	peration c circuind CMOS onal cirud the c	ts S logic circuits. cuits using CMOS ombinational circuits that are	
1st Semeste r	1st Quarter	3rd C 4th E 5th C	MOS logic circui xplain the varior combinational cir xplain the comb omposed of CMC	its us CMOS logic circ rcuits using CMOS inational circuits to OS logic circuits. uential circuits ential circuits that	uits. hat are	inverter op CMOS logi Understan Combinati Understan composed CMOS-bas Understan	c circui d CMOS onal cir d the c of CMOS ed sequent	ts S logic circuits. cuits using CMOS	
		3rd E 4th E c 5th E 6th E	MOS logic circui xplain the varior xplain the comb xplain the comb omposed of CMC MOS-based seq xplain the seque f CMOS logic cir SI manufacturin xplain topics su	its us CMOS logic circ rcuits using CMOS inational circuits tl OS logic circuits. uential circuits ential circuits that cuits.	uits. hat are are composed	inverter of CMOS logi Understan Combinati Understan composed CMOS-bas Understan LSI manuf Understan	c circui d CMOS onal cir d the c of CMOS ed sequent d the s of CMOS facturin d topics	ts S logic circuits. Cuits using CMOS Combinational circuits that are DS logic circuits. Luential circuits Luential circuits that are DS logic circuits. Luential circuits that are Lue	
		3rd CE 4th CC 5th CC 6th CO 7th E	MOS logic circui xplain the variou xplain the variou xplain the combomposed of CMC MOS-based sequal in the seque f CMOS logic circus I manufacturin xplain topics successive film format LSI design xplain functiona	its us CMOS logic circ reuits using CMOS inational circuits to OS logic circuits. uential circuits that cuits. ug process ch as silicon substr	uits. hat are are composed rates, gate ion.	inverter of CMOS logi Understan Combinati Understan composed CMOS-bas Understan composed LSI manuf Understan oxide film VLSI desig Understan	c circuid CMO: onal circuid the cof CMC ed sequent the cof CMC ed sequent the cof CMC	ts S logic circuits. cuits using CMOS ombinational circuits that are OS logic circuits. uential circuits equential circuits that are OS logic circuits. g process	

		9th E	Non-volatile memo Explain non-volatile and operation.		configuration	Non-volatile memory circuits Understand non-volatile memory circuit configuration and operation.			
			Circuit design exer Explain circuit inpu		≣ 1	Circuit design exercises using SPICE 1 Understand circuit inputs using SPICE.			
		11th E	Circuit design exercises using SPICE 2 Explain circuit inputs and operation verification using SPICE.			Circuit design exercises using SPICE 2 Understand circuit inputs and operation verification using SPICE.			
2nd		12th	Circuit design using submission 1 Solve the problems operation verificati	s regarding circui		Circuit design using SPICE; Assignment submission 1 Solve the problems regarding circuit inputs and operation verification using SPICE.			
Qua	Quarter Circuit design using SPICE; Assignment submission 2 Solve and submit the problems regarding circuinputs and operation verification using SPICE.					Circuit design using SPICE; Assignment submission 2 Solve the problems regarding circuit inputs and operation verification using SPICE.			
			Testing and reliabi Explain coverage a		stability.	Testing and reliability design Understand coverage and design for testability.			
		15th S	Summary and futu Explain topics such sensor nodes, and rends in VLSI tech	as more than M other future dev	oore, IoT elopment	Summary and future trends Understand topics such as more than Moore, IoT sensor nodes and other future development trends in VLSI technology.			
		16th N	No final exam						
Evaluation	Meth	od and W	eight (%)						
	Ass	ignments						Total	
Subtotal	100		0	0	0	0	0	100	
Basic Proficiency	o O		0	0	0	0	0	0	
Specialized Proficiency	100)	0	0	0	0	0	100	
Cross Area Proficiency	0		0	0	О	0	0	0	

Akashi College Course Information		Year	Year 2024		Course Title	Mathematical Informatics			
Course	Informa	tion							
Course C		6036			Course Category	/ Specializ	ed / Elective		
Class For	mat	Lecture	l lel i :		Credits	Academi	c Credit: 2		
Departme	ent	Mechanica Engineerin	l and Electronic g	System	Student Grade	Adv. 2nd	I		
Term		First Seme	ster		Classes per Wee	ek 2			
Textbook	and/or Materials	Materials v	vritten in Englis	h are distributed.					
Instructo		HAMADA Y	 ′ukihiro						
[1] Can r [2] Can e [3] Can e [4] Can e [5] Can e	explain the explain the explain the	nical book wr fundamentals	s of algorithms. s of trees.						
Rubric			l		lo		T.,		
			Ideal Level Can read a tec	hnical book	Standard Level Can read a tech	nical book	Unacceptable Level		
Achieven	nent 1			ish with little use	written in Englis dictionary.		Cannot read a technical book written in English.		
Achievem	nent 2		graphs sufficie		graphs.		fundamentals of graphs.		
Achieven	nent 3		of algorithms s		Can explain the algorithms.		fundamentals of algorithms.		
Achieven	nent 4		Can explain the of trees sufficient	ne fundamentals ently.	Can explain the fundamentals of trees.		Cannot explain the fundamentals of trees.		
Achievem	nent 5		Can explain gr algorithms suff	raph traversal ficiently.	Can explain grapal algorithms.	oh traversal	Cannot explain graph traversal algorithms.		
Assigne	ed Depar	tment Obje	ectives						
Teachir	ng Metho	od							
Outline		_				_	ook written in English. Japanese alternatively by teacher		
This cours guarantee assignme Notice To achiev (1) Read			e's content will d in classes and it reports. these goals, st everal pages of wo assignment	amount to 90 hou the standard self- tudents are require the technical boo reports.	rs of study in tota -study time requi ed to self-study o k before each cla	al. These hours red for pre-stu utside of classe ss.			
Charact	torictics		vno miss 1/3 or Division in Le	more of classes v	viii not be eligible	for evaluation			
	Learning	OI Class / L	☐ Aided by IC		☑ Applicable to	Remote Class	☐ Instructor Professionally Experienced		
Course	Dlan								
Course	Pian	Т	neme			Goals			
					(Can explain the definition of a graph. Also, can			
		1st W	hat is a graph		(explain what a graph models.			
		2nd Th	ne degree of a v	vertex, isomorphic	vertex and isomor				
		3rd Su	ubgraphs and de	egree sequences		degree sequenc			
	1st Quarter	4th Co	onnected graphs	s, cut vertices and	l bridges	Can explain thin cut vertices and	gs related to connected graphs, bridges.		
	Quarter	5th Sp	pecial graphs		(Can explain cor and hypercubes	nplete graphs, bipartite graphs s.		
		6th Di	graphs				ngs related to digraphs.		
1st Semeste		7th Al	gorithmic comp	lexity		Can explain alg notation.	orithmic complexity and order		
r		8th Se	earch algorithms	s and sorting algo	rithms (Can explain the oubblesort algo	binary search algorithm and rithm.		
		9th In	troducing NP-co	ompleteness	(Can explain NP	-completeness.		
			reedy algorithm omputer	s and representing	g graphs in a	Can explain gre the adjacency r ist of a graph	edy algorithms. Also, can explain natrix of a graph, the adjacency stack and queue.		
	2nd		operties of tree	S	(Can explain the	fundamental properties of trees.		
	Quarter	H + + + + + + + + + + + + + + + + + + +	ooted trees			· · · · · · · · · · · · · · · · · · ·	ngs related to rooted trees.		
			epth-first search	1		Can explain the depth-first search algorithm.			
					17	Can explain an algorithm that finds the blocks of graph.			
			nding Blocks readth-first sear		9	graph.	Breadth-first search algorithm.		

	16th	No final exam									
Evaluation Method and Weight (%)											
	Explanation when reading in turns	Report	Mutual Evaluations between students	Behavior	Portfolio	Other	Total				
Subtotal	60	40	0	0	0	0	100				
Basic Proficiency	0	0	0	0	0	0	0				
Specialized Proficiency	60	40	0	0	0	0	100				
Cross Area Proficiency	0	0	0	0	0	0	0				

Akashi College			Year	2024			ourse Title	Optimization Design		
Informat	ion									
	6037				Course Catego	rv	y Specialized / Elective			
	Lecture					,	Academic Credit: 2			
ent	Mechani		and Electronic S	System	Student Grade		Adv. 2nd			
	Second	Sem	ester		Classes per We	eek	2			
and/or Materials										
•	SHI Fen	ghui								
Obiective	es									
 Understand and learn about the knowledge and methods for optimization and optimal design. Understand and can calculate basic mathematical formulas for linear and nonlinear programming optimization techniques. Understand the concepts and mathematical expressions of multi-objective optimization. Can explain and practice the principles of optimal design for genetic algorithms. Can create the optimal design for a helical gear reducer as an example of optimal design, and apply the optimization. 										
		Ic	deal Level		Standard Level			Unacceptable Level		
ent 1		U al m	Inderstand and bout the knownethods for opt	ledge and	Understand and knowledge and	d learn I metho	ds for	Do not understand and learn about the knowledge and		
ent 2		U ca m lir pi	Inderstand and alculate the ba nathematical for near and nonling or gramming o	sic ormulas for near	basic mathema linear and nonl	itical fo inear	rmulas for	Do not understand and cannot		
ent 3		aı	nd mathematic	mathematical e	thematical expressions of		Do not understand the concepts and mathematical expressions of multi-objective optimization			
		g	genetic algorithms and genetic algorithm		nms and		Fully understand the idea of genetic algorithms and mathematical expressions			
		O	ptimal design f	nd calculate the for a helical gear	Can program and calculate the optimal design for a helical gear reducer		ulate the elical gear	Can program and calculate the optimal design for a helical gear reducer		
d Depart	ment Ol	oiec	tives							
		- ,								
<u> </u>	Optimize actively As compain the full optimize	used outer iture ition	d in a variety ors continue to ors. In this could design and op	f fields in respons develop, the imporse, students will timization technic	se to the deman ortance of optim learn about the ques. They will a	d for hi ization concep also lea	igher perfo and optim ots and pro orn specific	ormance in mechanical systems. nal design is expected to increase ocesses of optimization and		
	1		•	-				ate.		
	This cou guarante assignm	rse's eed i	s content will a in classes and reports.	mount to 90 hou the standard self-	rs of study in to study time requ	tal. The uired fo	ese hours r pre-stud	include the learning time		
eristics c	of Class /	ν Div	vision in Lea	rning						
Learning	•		Aided by ICT	Γ	☑ Applicable to a positive to a positiv	o Remo	ote Class	☐ Instructor Professionally Experienced		
Plan										
		The	me			Goals				
	1st	Cou	rse guidance					rse content in accordance with the		
	2nd	Opti	imization conce	epts and terminol	ogy	Explair optimiz and op	n concepts zation thro ptimization	s, terminology, and techniques of ough examples of optimal design, and optimal design problems.		
3rd Quarter	3rd	(Mat Lear	tlab) rn the basic on	erations of Matlal	o/Simulink and			LAB/Simulink and Optimization		
-	4th	Line	ear programmii	ng optimization (1)	An out	line of line ms and fo	ear programming optimization rmulation methods.		
	5th	Line	ear programmii	ng optimization (2	2)	·		and examples of its application.		
			<u> </u>			Example applications of linear programming methods. Linear programming optimization using Matlab's				
	Information de mat and/or Materials objective stand and stand and stand the objective explain and eate the objective	Information ode 6037 mat Lecture ont Mechani Enginee Second and/or Materials SHI Fen Objectives stand and learn aboustand and can calculation stand the concepts applain and practice the eate the optimal des ent 1 ent 2 ent 3 d Department Of g Method Optimization and practice the optimal des compliance of the concepts applain and practice the eate the optimal des ent 1 ent 2 ent 3 d Department Of g Method Optimization actively As compliant the function of the functio	Information ode 6037 mat Lecture Ent Engineering Second Sem and/or Materials SHI Fenghui Objectives stand and learn about th stand and can calculate th stand and can calculate th stand the concepts and r xplain and practice the preate the optimal design ent 1	Information Infor	Information de	Information Information Index	Information Jode 6037 Course Category mat Lecture Credits Mechanical and Electronic System Student Grade Second Semester Classes per Week and/or Materials Stand and learn about the knowledge and methods for optimization and optimisation and concepts and mathematical formulas for linear and nonlinear postand and concepts and mathematical expressions of multi-objective optimization and optimisation for linear and nonlinear programming optimisation techniques. Pully understand the concepts and mathematical expressions of multi-objective optimisation and mathematical expressions. Can program and calculate the optimisation and mathematical expressions of multi-objective optimisation and mathematical expressions. Can program and calculate the optimisation enablematical expressions. Can program and calculate the optimisation (which covers a wide range of fields) and optimisation externiques. Dy mathematical expressions of mathematical expressions of multi-objective optimisation in the future. In this course, students will learn about the concept optimization expressions of mathematical expressions. Classes will be held in a lecture style. There will be assignments as This course's content will amount to 90 hours of study in total. This guaranteed in classes and the standard self-study time required for assignment reports. Students who miss 1/3 or more of classes will not be eligible for expressions of Classes will be held in a lecture style. There will be	Information Infor		

An overview of non-linear optimization problems and optimization techniques. Explain application examples of nonlinear programming optimization (2) 8th Nonlinear programming optimization (3) 8th Nonlinear programming optimization (2) 8th Nonlinear programming optimization (3) 8th Report 2: Multi-objective optimization of new bus particular optimization techniques and pear SUNT, linear minimization techniques and pear SUNT, linear minimization techniques, and Powell's conjugation in the exercise. 12th Report 2: Optimal designs for helical gear reducers (2) 12th Report 2: Optimal designs for helical gear reducers (3) 13th Report 2: Optimal designs for helical gear reducers. 13th Report 2: Optimal designs for helical gear reducers. 14th Report 2: Optimal designs for helical gear reducers (3) 15th Summary and evaluation Summarize and review the content learned on this course. 15th Final exam 15th								
Sth Nonlinear programming optimization (2) preprocessing, optimization calculation programs, and examination of optimization results. Genetic algorithms (GA) Learn an overview for genetic algorithms and the contents of an optimal solution search program. Take design examples and compare them with other optimization techniques and learn SUMT, linear minimization techniques, and Powell's conjugate direction method. Take application examples to learn how to do multi-objective optimization of new bus routes (1) In the Report 1: Multi-objective optimization of new bus routes (2) In the Report 2: Optimal designs for helical gear reducers (1) In the Report 2: Optimal designs for helical gear reducers (2) In the Report 2: Optimal designs for helical gear reducer. In the Report 2: Optimal designs for helical gear reducer. In the Report 2: Optimal designs for helical gear reducer. In the Report 2: Optimal designs for helical gear reducer. In the Report 2: Optimal designs for helical gear reducer. In the Report 2: Optimal designs for helical gear reducer. In the Report 2: Optimal designs for helical gear reducer. In the Report 2: Optimal designs for helical gear reducer. In the Report 2: Optimal designs for helical gear reducer. In the Report 2: Optimal designs for helical gear reducer. In the Report 2: Optimal designs for helical gear reducer. In the Report 2: Optimal designs for helical gear reducer. In the Report 2: Optimal designs for helical gear reducer. In the Report 2: Optimal designs for helical gear reducer. In the Report 2: Optimal designs for helical gear reducer. In the Report 2: Optimal designs for helical gear reducer. In the Report 3: Optimal designs for helical gear reducer. In the Report 3: Optimal designs for helical gear reducer. In the Report 3: Optimal designs for helical gear reducer. In the Report 3: Optimal designs for helical gear reducer. In the Report 3: Optimal designs for helical gear reducer. In the Report 3: Optimal designs for h			7th	Nonlinear programming optimizatio	n (1)	and optimization techniques. Explain application examples of nonlinear programming in engineering and unconstrained		
Path Nonlinear programming optimization (3) Learn an overview for genetic algorithms and the contents of an optimal solution search program. Take design examples and compare them with other optimization techniques and learn SUMT, linear minimization techniques, and Powell's conjugate direction method. 10th Multi-objective optimization Report 1: Multi-objective optimization of new bus routes (1) Multi-objective optimization of new bus routes (2) Learn about the weighted method for the multi-objective optimization in the exercise. Plan a new bus route to maximize customer satisfaction and profit for the bus operator using multi-objective optimization in the exercise. Plan a new bus route to maximize customer satisfaction and profit for the bus operator using multi-objective optimization using Matlab's Optimization Toolbox. Use the gear design knowledge learned in Engineering Design and Desi			8th	Nonlinear programming optimizatio	n (2)	preprocessing, optimization calculation programs,		
10th Report 1: Multi-objective optimization of new bus routes (1) Nulti-objective optimization of new bus routes (1) Nulti-objective optimization method. Take application examples to learn how to do multi-objective optimization in the exercise.			9th	Nonlinear programming optimizatio	n (3)	Learn an overview for genetic algorithms and the contents of an optimal solution search program. Take design examples and compare them with other optimization techniques. Explain constrained optimization techniques and learn SUMT. linear minimization techniques, and		
Ath Quarter			10th	Report 1: Multi-objective optimizati	on of new bus	objective optimization method. Take application examples to learn how to do multi-objective		
12th Report 2: Optimal designs for helical gear reducers (1) Examination Exercise&Report Total			11th		on of new bus	satisfaction and profit for the bus operator using multi-objective optimization. Multi-objective		
reducers (2) Report 2: Optimal designs for helical gear reducers (3) Summary and evaluation Final exam Evaluation Method and Weight (%) Examination Examination Exercise&Report Subtotal Basic Proficiency 30 Sumination Fromote Matlab programming creation (M-files). Study the optimization results, compare them with the computation results done in this course, and recognize the importance of optimal design. Summarize and review the content learned on this course. Final exam Evaluation Method and Weight (%) Examination Exercise&Report Total 100 Basic Proficiency 30 30 60 Specialized Proficiency 10 20 30			12th	Report 2: Optimal designs for helical reducers (1)	al gear	Engineering Design and Design and Drawing, and create the optimal design for a helical gear		
14th Report 2: Optimal designs for helical gear reducers (3) Study the optimization results, compare them with the computation results done in this course, and recognize the importance of optimal design. 15th Summary and evaluation Summarize and review the content learned on this course. 16th Final exam			13th	Report 2: Optimal designs for helica reducers (2)	al gear			
Evaluation Method and Weight (%) Examination Examination Exercise&Report Subtotal Basic Proficiency 30 Specialized Proficiency 15th Summary and evaluation Examination Exercise&Report Total 100 100 60 30 30 30 30 30 30 30 30			14th		al gear	Study the optimization results, compare them with the computation results done in this course,		
Evaluation Method and Weight (%) Examination Exercise&Report Total Subtotal 40 60 100 Basic Proficiency 30 30 60 Specialized Proficiency 10 20 30			15th	Summary and evaluation				
Examination Exercise&Report Total Subtotal 40 60 100 Basic Proficiency 30 30 60 Specialized Proficiency 10 20 30			1					
Subtotal 40 60 100 Basic Proficiency 30 30 60 Specialized Proficiency 10 20 30	Evaluat	ion Meth	od and '	Weight (%)				
Basic Proficiency 30 30 60 Specialized Proficiency 10 20 30					· ·	ort		
Specialized Proficiency 10 20 30								
Cross Area Proficiency 0 10 10	-							
	Cross Are	a Proficier	ncy	[0	10		10	

А	kashi Co	ollege	Year	2024			Course Title	Micromachine
Course	Informa	tion	1					
Course Co		6038			Course Categor	<i>'</i>		ed / Elective
Class Forr	mat	Lecture	cal and Electroni	c System	Credits			c Credit: 2
Departme	ent	Engineer		c system	Student Grade		Adv. 2nd	l
Term Textbook		Second 9	Semester		Classes per We	ek	2	
Teaching								
Instructor		· ·	UKA Naoki					
(2) Under (3) Can e: (4) Under	stand the stand and xplain mic stand and	characteris I can explai romachines I can explai	n the principles of from their struct n detection princ	ic materials and ca of typical semicond cture to the fabrica iples of sensors an chniques. (F) and (I	uctor micromach tion process. (F) d driving principl	ińing	technique	
Rubric								
			Ideal Level	1.11	Standard Level			Unacceptable Level
Achievem	ent 1		material and calculate the	and the s of anisotropic can accurately physical property stal orientation.	Understand the of anisotropic n calculate the phyalues of crysta	nateria	als and call property	n Do not understand the characteristics of anisotropic materials and cannot calculate the physical property values of crystal orientation.
Achievem	ent 2		of typical sem	plain the principles	Understand an the principles o semiconductor techniques.	f typic	al ·	Do not understand and cannot explain the principles of typical semiconductor micromachining techniques.
Achievem	ent 3							Cannot explain micromachines detail from their structure to the fabrication process.
			Fully understa accurately ex principles of s principles of a	plain detection sensors and driving	Understand and can explain detection principles of sensors and driving principles of actuators.		f sensors	Do not understand and cannot explain detection principles of sensors and driving principles of actuators.
				y apply sensor and gn techniques.				Cannot apply sensor and actuator design techniques.
		tment Ob	jectives					
Outline	g Metho	Microma sensors, in a wide techniqu	actuators, and e range of fields. les and microma	electronic circuits u The first half of th chine fabrication m	sing semiconduc is course will exp ethods. The seco	tor mi plain ty ond ha	icromachir ypical sem alf will exp	at integrate micro structures, ning technology. They are applied integrated micromachining lain the principles of sensors used tor design techniques.
Style		Classes	will be held in a	lecture-style forma	t and will be taug	ght wi	th handou	its.
Notice		guarante assignm strength knowled	eed in classes an ent reports. It is of materials, an ge will be explai	d the standard self recommended that d electronic circuits	-study time requ t students have s. However, this	iired fo a basi course	or pre-stu c knowled e is open t	s include the learning time dy / review, and completing ge of engineering materials, to all students as the necessary
Charact	eristics (of Class /	Division in L	earning				
□ Active	Learning		☐ Aided by I	СТ	☐ Applicable to	o Rem	note Class	☐ Instructor Professionally Experienced
Course	Plan							
			Theme			Goals		
		1st	An overview of I	micromachines(1)		Understand micromachine development historand scaling laws.		
		2nd	An overview of Physical propert	micromachines(2) ies of single-crysta	l silicon (1) 🔠	Understand the micromachine developr history, scaling laws, crystal structure, manufacturing methods and anisotropic properties of single-crystal silicon.		laws, crystal structure, methods and anisotropic
		3rd	Physical propert	ies of single-crysta	l silicon (2)	physic	cal proper	calculation method for the ties in arbitrary crystal orientation
2nd Semeste	3rd	4th	Photolithograph	У		of single-crystal silicon. Understand the principles of photolithogra		
r	Quarter	5th	Film deposition	(1)				sputter, vapor deposition, and deposition methods.
		6th	Film deposition	(2)			rstand the	rmal oxidation and impurity
		7th	Etching			Under etchir	rstand liqu	nid-based isotropic and anisotropic e-crystal silicon. i-based dry-etching.
		8th	Micromachine fa	brication technolog		Under	rstand mic	cromachine fabrication processes uctor micromachining techniques.

		9th	Medium exam							
		10th	Sensor design ted	chnology (1)		Understand typic principles.	Understand typical micro-sensors and sensing principles.			
		11th	Sensor design ted	chnology (2)		Understand how to design piezoresistive pressure sensors.				
	4th	12th	Sensor design ted	chnology (3)		Design a piezore	sistive pressure s	sensor.		
	Quarte	13th	Actuator design t	echnology (1)		Understand typical micro actuators and their driving principles.				
		14th	Actuator design t	echnology (2)		Understand how to design an electrostatic drive actuator.				
		15th	Final exam	l exam						
		16th								
Evaluat	ion Me	thod and	Weight (%)							
		ttendance	Examination					Total		
Subtotal	3	10	70	0	0	0	0	100		
Basic Proficienc			0	0	0	0	0	0		
Specialize Proficienc			70	0	0	0	0	100		
Cross Are			0	0	0	0	0	0		