Course number U-ENG20 42105 LJ77	工学倫理(2)
Course title (and course title in English) 工学倫理 English) Graduate School of Informatics Professor,KANDA TAKAYUKI Graduate School of Engineering Professor,MATSUBARA ATSUSHI Graduate School of Engineering Professor,SHIRAISHI MASASHI Graduate School of Engineering Professor,SHIRAISHI MASASHI Graduate School of Letters Associate Professor,KODAMA SATOSHI Graduate School of Letters Associate Professor,KODAMA SATOSHI Graduate School of Letters Associate Professor,KODAMA SATOSHI Graduate School of Letters Associate Professor,MATSUSAKA SHUJI Graduate School of Letters Associate Professor,MATSUSAKA SHUJI Graduate School of Engineering Professor,MATSUSAKA SHUJI Graduate School of Engineering Professor,TATSUSAKA SHUJI Graduate School of Engineering Professor,TATSUSAKA SHUJI Graduate School of Engineering Professor,TATSUSAKA SHUJI Graduate School of Engineering Professor,TATSUSAKA SHUJI Graduate School of Engineering Professor,TADA SAYUKI Graduate School of Engineering Professor,TADA TADASHI Graduate School of Engineering Professor,TADA TADASHI Graduate School of Engineering Professor,MURA MASAYUKI Graduate School of Engineering Professor,MURA MASAYUKI Graduate School of Engineering Professor,MURA KEN Graduate School of Engineering	 This lecture focus on various ideas in ethics (utilitarianism, deontology, virtue ethics, professional ethics etc.) which will be useful for thinking about particular ethical problems in engineering ethics. This Lecture will be conducted online by using zoom. (5/6) "Engineering Ethics as a Professional Ethics:" This lecture discusses basic ideas of engineering ethics in comparison with other fields of applied ethics. In particular, it discusses the characteristics of engineering ethics as professional ethics and what engineers as professionals are required to do. (5/13) "Ethics for Engineers" Engineers have to go through some ethical issues about research, development, design, manufacturing, and maintenance. In particular, the ethical decisions of engineers need to be considered for society and environment. (5/20) Press Release is an essential process for introducing the research to our society through various medias. In this lecture, issues related to Press Release will be addressed and discussed with several examples including SNS release. Lecture will be conducted by Zoom. (5/27) "Ethics in Water Supply." It is a basic right in a society that a person can receive and use safe water in sufficient quantity. In addition, a person of water supplier and an engineer is discussed. It is given by Zoom. (6/3) "Forensic Analysis" Forensic reports are sometimes requested by the court in order to clarify the charge of incidents. The nylon rope incident, the Wakayama curry poisoning incident, and the pig iron incident are explained as examples. How to write the forensic report is explained in order to avoid the ethical problems. (Zoom& Youtube) (6/10) "Patents and Ethics (Part 1)" This course will teach the students about 1) patent systems which protect inventions and research results and 2) ethical issues in patents. The first class, in preparation for the next subject of patent ethics, introduces Japan's patent system wit
Target year 4th year students or above Number of credits 2 Year/semesters 2021/First semester	actual case studies on ethical and legal issues in patents. (6/24) "Urban Planning and Ethics"
Days and periods Thu.3 Class style Lecture Language distuicion Japanese	The lecture focuses on the norms regulating the actions of the engineers involved in planning and designing urban areas, as well as on the normative consciousness required to facilitate such planning and design,
[Overview and purpose of the course] Modern ethics based on engineering aspect are becoming essential to present engineers and scientists. Instructors from various faculties give lectures about ethics in their research fields. [Course objectives] The goal of this class is to understand engineering ethics, and to develop the ability to judge by yourself when you encounter ethical issues. [Course schedule and contents] (4/8) The central topic is what is ethics for engineers and what is significance of studying ethics for engineers. (4/15) "General research ethics" Lectures on the concept of writing academic papers with ethics. (4/22)" Ethical Theories for Engineering Ethics" Continue to T学倫理(2)↓↓↓	 demonstrating some examples on urban transport planning. This will be given via Zoom. (7/1) "General research ethics of synthetic chemistry" Lectures on the concept of writing academic papers and patents of synthetic chemisty with ethics. (7/8) Architecture has developed by imitating beautiful buildings, but in recent years there has been an increase in the number of cases where copyright disputes have arisen. In addition, the appearance of architecture often causes landscape controversy because of its influence on the surrounding environment. Issues concerning the ethics and sociality of architecture are discussed while introducing overseas lawsuits and design processes. (7/15) The materials engineer may stand on the side using materials as well as a side supplying materials. Some examples are introduced and, by this lecture, are argued about an ethic found from each situation by materials engineer. Note that this lecture is going to be carried out in ZOOM, but may be changed to the ondemand on account of the speaker. (7/29) "Engineer ethics in mechanical design" Engineer ethics is not a passive and passive thinking that issues the action of simply following existing norms, but a more active and creative thinking to decide and design noe's own actions. It requires the logical thinking and ethical thinking necessary for engineers. This is explained with past cases in mechanical design.
工学倫理(3)	
L 子倫理(3) [Course requirements] None [Evaluation methods and policy] Class participation and reports. [Textbooks] Lecture materials will be distributed. [References, etc.]	Course number U-ENG20 12108 LJ77 Course itile (and course itile English) U-ENG20 12108 LJ77 Course itile (and course itile in English) U-ENG20 12108 LJ77

ר ר

[References, etc.] (Reference books)

[Engineering Ethics (Revised Edition)] (CORONA PUBLISHING CO., LTD.) ISBN:978-4-339-07798-

[World of Engineering Ethics (3rd Edition)] (Morikita Publishing Co., Ltd.) ISBN:978-4-627-97303-9

[Study outside of class (preparation and review)]

The assignment of the report will be given for each lesson

(Other information (office hours, etc.))

The class order is subject to change

*Please visit KULASIS to find out about office hours.

[Courses delivered by instructors with practical work experience]

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

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

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

Graduate School of Engineering Professor,HIKIHARA TAKASHI

Graduate School of Engineering Professor, KAWASE MOTOAKI Graduate School of Inform

Year/semesters 2021/Intensive, First semester

Language of instruction Japanese

rofessor, YAMASHITA NOBUO

and technology. Lectures are for understanding the role that technology is playing in modern society, for reconfirming importance to study engineering and to work as a researcher and engineer in society, and are to be opportunities to consider own future path. Essays are assigned in every lecture to summarize the lecture ontent and opinions of other students. content and opinions of other students. Schedule of the lectures are announced later.

Special lectures, l time, About basic knowledge and attitude as students who start to learn engineering, and the nole of engineering in society. Intensive lectures,6times, A series of lectures offered by special lecturers playing on global stages of science

Continue to 工学序論(2)↓↓↓

1 st year students or above Number of credits 1

Lecture

Engineering is to inquire after truth, to develop useful technologies, and to establish ways how to give back

Then, we offer a series of intensive lectures about how engineering can suggest solutions of current and future problems of our society, the value of technology, and the responsibilities that researchers and engineers

Students learn basic matters such as attitudes and responsibilities they are expected to take as a member of ocial community. They find value in studying engineering and become to consider what they do in future by inderstanding technology can suggest solutions of problems our society is facing, especially problems about

First, we offer special lectures regarding the basic knowledge that students in faculty of engineering are

Class style

Target year

expected to have.

are expected to fulfill.

[Course objectives]

[Course schedule and contents]

safety and security.

Days and periods Intensive

[Overview and purpose of the course]

evelopment results of technology to the society

Course number U-ENG20 32402 SE77
Course title Instructor's
(and course) 工学部国際インターンシップ 1 name, job title, title in Faculty of Engineering International Internship 1 and department Approved
English) of affiliation
Target year Brd year students or above Number of credits 1 Year/semesters 2021/Intensive, year-ro
Days and periods Intensive Class style Seminar Language distriction Japanese and Engl
[Overview and purpose of the course]
Acquisition of international skills with the training of foreign language through the internship programs hosted by the University, the Faculty of Engineering, or the undergraduate school the applicant belongs t
[Course objectives] The acquisition of international skills with the training of foreign language through the to internship prog
hosted by the University is the major expectation to the students.
[Course schedule and contents]
Overseas Internship, Itime, The contents to be acquired should be described in the brochure of each intern program.
Final Presentation, Itime, A presentation by the student is required followed by discussion among particip
[Course requirements]
Described in the application booklet for each internship program. The registrant is requested to have enough
language skills for the participation.
[Evaluation methods and policy] Marit rating is done based on the presentation or reports after each internship program. Each Departmen
responsible to identify if the credit earned by this subject to be included as mandatory ones or not. If the credit is not included in the undergraduate school in which the participant belongs to, the credit is granter
the Global Leadership Education Center as a optional credit. The number of credits, either 1 or 2, will be
determined depending on the contents and the duration of the program that the participant has participate
[Textbooks]
Course number U-ENG20 22403 SJ77
Course title Instructor's Graduate School of Engineerin
Course title (and course title in English)
Course title (and course) title in English) Target year Dud year students or above Number of credits 1
Course title (and course) fittle in English) Target year Days and periods Intensive Class style
Course title (and course title in English)
Course title (and course title in English) Graduate School of Engineerin Gabal Leadership Seminar I (Study for methodology in a company) Gabal Leadership Seminar I (Study for methodology in a company) Target year Days and periods Intensive Class style Seminar Intensive Class style Course I The purpose of the course] The purpose of the course] The purpose of the course I The purpose of
Course title (and course) title in English) Target year and year students or above Days and periods Intensive Class style Seminar (Study for methodology in a company) Days and periods Intensive Class style Seminar (Study for methodology in a company) Days and periods Intensive Class style Seminar (Study for methodology in a company) The purpose of this course is to study about how worldwide leading company, institute, etc. make propose and find solutions for expanding their own technologies to the international market. Throughout hands-oo training on their laboratory, students in capability. As extended exersice subject of this course, the Global
Course title (and course title in English)
Course title (and course) title in English) Course title (and course) Global Leadership Seminar I (Study for methodology in a company) Global Leadership Seminar I (Study for methodology in a company) Target year Days and periods Intensive Class style Class style Class style Class style Seminar Course in the international market. Throughout hands-on training on their laboratory, students in capability. As extended exersive subject of this course, the Global Leadership Seminar II is opened in the second semiser. Course objectives]
Course title (and course title in English) Graduate School of Engineerin Gabal Leadership Semimar I (Study for methodology in a company) Target year and year students or above Number of credits I Year/semesters Course with the students or above Number of credits I Year/semesters Course with the students or above Number of credits I Year/semesters Course with the students or above Number of credits I Year/semesters Course with the students or above Number of credits I Year/semesters Course with the students or above Number of credits I Year/semesters Course with the students or above Number of credits I Year/semesters Course with the students or above Number of credits I Year/semesters Course with the students or above Number of credits I Year/semesters Course with the students or above Number of credits I Year/semesters Course with the students or above Number of credits I Year/semesters Course with the students or above Number of credits I Year/semesters Course with the students or above Number of credits I Year/semesters Course with the students or above Number of credits I Year/semesters Course with the students or above Number of credits I Year/semesters Course with the students investigate the methodology of team organization, proposal, market prediction and conception ability by group works. After the investigation, students are expected to improt their comprehension and explanation capability. As extended exersice subject of this course, the Global Leadership Semimar II is opened in the second semester. Course objectives T The goal of this course is to improve student's comprehension and explanation capability for processes or proposal and expansion on the international market investigating worldwide leading companies by group
Course title (and course) title in English) Jローイル・リーダーシップセミナー1(企業調査研究) Gibal Leadership Seminar 1(Study for methodology in a company) Instructor's name, job title, and department of affiliation Graduate School of Engineerin Senior Lecturer, YOROZU KAZ Graduate School of Engineerin Senior Lecturer, KOMIYAMA YO Target year 2nd year students or above Number of credits 1 Year/semesters 2021/Intensive, year-re Days and periods Intensive Class style Seminar Langup distudint Japanese [Overview and purpose of the course] The purpose of this course is to study about how worldwide leading company, institute, etc. make propos and find solutions for expanding their own technologies to the international market. Throughout hands-ou training on their laboratory, students investigate the methodology of team organization, proposal, market prediction and conception ability by group works. After the investigation, students are expected to impro their comprehension and explanation capability. As extended exersice subject of this course, the Global Leadership Seminar II is opened in the second semester. [Course objectives] The goal of this course is to improve student's comprehension and explanation capability for processes of proposal and expansion on the international market invesitigating worldwide leading companies by group work.
Course title (and course title in English) Graduate School of Engineerin Gabal Leadership Seminar I (Study for methodology in a company) Target year Days and periods Intensive Class style Seminar Days and periods Intensive Class style Seminar Days and periods Intensive Class style Seminar Days and periods Intensive to the course] The purpose of the course is to study about how worldwide leading company, institute, etc. make propose and find solutions for expanding their own technologies to the international market. Throughout hands-ou training on their laboratory, students investigate the methodology of team organization, proposal, market prediction and explanation capability. As extended exersice subject of this course, the Global Leadership Seminar II is opened in the second semester. ICourse objectives] The goal of this course is to improve student's comprehension and explanation capability for processes or proposal and expansion on the international market investigating worldwide leading companies by group work.
Course title (and course) title in English) Gibal Leadership Seminar 1(Study for methodology in a company) Target year and year students or above Number of credits 1 Year/semesters 2021/Intensive, year-rol Days and periods Intensive Class style Seminar Uppage disting The purpose of this course is to study about how worldwide leading company, institute, etc. make propos and conception ability by group works. After the investigation, students are expected to improv their comprehension and explanation capability. As extended exersive subject of this course, the Global Leadership Seminar II is opened in the second semester. Course objectives] The goal of this course is to improve student's comprehension and explanation capability for processes or proposal and expansion on the international market investigating worldwide leading companies by group work. Course schedule and contents] Week 1, Guidance Week 2-13, Hands-on training
Course title (and course) (and course) (and course) (and course) (and leadenship Seminar I (Study for methodology in a company) (and department of affiliation Target year Intensive Class style Seminar Course it is of the course) The purpose of this course is to study about how worldwide leading company, institute, etc. make propose and find solutions for expanding their own technologies to the international market. Throughout hands-on their comprehension and explanation capability. As extended exersice subject of this course, the Global Leadership Seminar II is opened in the second semester. (Course objectives) The gurpose of this course is to student's comprehension and explanation capability for processes or proposal and expansion on the international market investigating worldwide leading company is provided the second semester. (Course objectives) The gurpose of this course is to student's comprehension and explanation capability for processes or proposal and expansion on the intermational market investigating worldwide leading companies by group work.
Course title (and course) title in English) Instructor's (abal Leadership Seminr 1 (Study for methodology in a company)) Instructor's name, job title, and department of affiliation Graduate School of Engineerin Senior Lecturer, YOROZU KAZ Graduate School of Engineerin Senior Lecturer, KOMIYAMA YO Target year Ind year students or above (Intensive) Number of credits 1 Year/semesters D021/Intensive, year-rot Days and periods The purpose of this course is to study about how worldwide leading company, sustitute, etc. make propose and find solutions for expanding their own technologies to the international market. Throughout hands-oo training on their laboratory, students in vestigate the methodology of team organization, proposal, market prediction and explanation capability. As extended exersice subject of this course, the Global Leadership Seminar II is opened in the second semester. Icourse objectives] The goal of this course is to improve student's comprehension and explanation capability for processes of proposal and expansion on the intermational market investigating worldwide leading companies by group work. Icourse schedule and contents] Week 1, Guidance Week 14, Pre-presentation Week 15, Final presentation
Course title (and course title in English) Instructor's Gabal Leadership Seminar 1(Study for methodology in a company) Instructor's name, job title, and department of affiliation Graduate School of Engineerin Senior Lecturer, YOROZU KAZ Graduate School of Engineerin Senior Lecturer, KOMIYAMA YO Target year 2nd year students or above Number of credits 1 Year/semesters 2021/Intensive, year-re Days and periods Intensive Class style Seminar Image distinction Japanese [Overview and purpose of the course] The purpose of this course is to study about how worldwide leading company, institute, etc. make propos and find solutions for expanding their own technologies to the international market. Throughout hands-ou training on their laboratory, students investigate the methodology of team organization, proposal, market prediction and conception ability by group works. After the investigation, students are expected to impro their comprehension and explanation capability. As extended exersice subject of this course, the Global Leadership Seminar II is opened in the second semester. [Course objectives] The goal of this course is to improve student's comprehension and explanation capability for processes of proposal and expansion on the international market invesitigating worldwide leading companies by group work. [Course schedule and contents] Week 1, Guidance Week 15, Final presentation Week 15, Final presentation Week 15, Final presentation How to register will be annou
Course title (and course) (ittle in English) パローバル・リーダーシップたミナー1(企業調査研究) Global Leadership Seminer 1(Study for methodology in a company) Instructor's name, job title, and department of affiliation Graduate School of Engineerin Senior Lecturer, YOROZU KAZ Graduate School of Engineerin Senior Lecturer, KOMIYAMA YO Target year Ind year students or above Days and periods Intensive Class style Seminar Lappap distinction The purpose of this course is to study about how worldwide leading company, institute, etc. make propos and find solutions for expanding their own technologies to the international market. Throughout hands-oo training on their laboratory, students in vestigate the methodology of team organization, proposal, market prediction and conception ability by group works. After the investigation, students are expected to improv their comprehension and explanation capability. As extended exersive subject of this course, the Global Leadership Seminar II is opened in the second semester. ICourse objectives] The goal of this course is to improve student's comprehension and explanation capability for processes of proposal and expansion on the international market investigating worldwide leading companies by group work. ICourse schedule and contents] Week 1, Guidance Week 2-13, Hands-on training Week 14, Pre-presentation Week 15, Final presentation International
Course title (and course) title in English) Instructor's (abal Leadeship Seminar 1(Study for methodology in a company)) Instructor's name, job title, and department of affiliation Graduate School of Engineerin Senior Lecturer, YOROZU KAZ Graduate School of Engineerin Senior Lecturer, KOMIYAMA YO Target year 2nd year students or above Very Number of credits 1 Year/semesters 2021/Intensive, year-red of affiliation Days and periods Intensive Class style Seminar Langap distuding Japanese [Overview and purpose of the course] The purpose of this course is to study about how worldwide leading company, institute, etc. make propose and find solutions for expanding their own technologies to the international market. Throughout hands-ou training on their laboratory, students investigate the methodology of team organization, proposal, market prediction and conception ability by group works. After the investigation, students are expected to impro their comprehension and explanation capability. As extended exersice subject of this course, the Global Leadership Seminar II is opened in the second semester. [Course objectives] The goal of this course is to improve student's comprehension and explanation capability for processes o proposal and expansion on the international market invesitigating worldwide leading companies by group work. [Course schedule and contents] Week 1, Guidance Week 14, Pre-presentation Week 15, Final presentation Week 15, Final presentation Evaluati
Course title (and course) title in English) Instructor's (abal Leadership Seminer 1(Study for methodology in a company)) Instructor's name, job title, and department of affiliation Graduate School of Engineerin Senior Lecturer, YOROZU KAZ Graduate School of Engineerin Senior Lecturer, KOMIYAMA YO Target year and year students or above (abal Leadership Seminer 1(Study for methodology in a company)) 1 Year/semesters po21/Intensive, year-rol or 21/Intensive, year-rol Days and periods Target year and year students or above (abal Leadership Seminer) Class style Seminar Lappage institute, etc. make propose and find solutions for expanding their own technologies to the international market. Throughout hands-oo training on their laboratory, students investigate the methodology of team organization, proposal, market prediction and conception ability by group works. After the investigation, students are expected to impro their comprehension and explanation capability. As extended exersice subject of this course, the Global Leadership Seminar II is opened in the second semester. ICourse objectives] The goal of this course is to improve student's comprehension and explanation capability for processes of proposal and expansion on the international market investigating worldwide leading companies by group work. ICourse schedule and contents] Week 1, Guidance Week 1, Final presentation Improve students who want to join this course is requested to attend the f class. IEvaluation methods and policy] Students are prohibited to skip hands-on t
Course ittile (and course) (ittie in English) Instructor's (ideal Leadening Seminer 1(Study for methodology in a company)) Instructor's name, job title, and department of affiliation Graduate School of Engineerin Senior Lecturer, YOROZU KAZ Graduate School of Engineerin Senior Lecturer, KOMIYAMA YO Target year and year students or above Days and periods Intensive Class style Seminar Lappa distinction Target year and year students or above Days and periods Intensive Class style Seminar Lappa distinction The purpose of this course is to study about how worldwide leading company, institute, etc. make propose and find solutions for expanding their own technologies to the international market. Throughout hands-ou training on their laboratory, students investigate the methodology of team organization, proposal, market prediction and conception ability by group works. After the investigation, students are expected to improv their comprehension and explanation capability. As extended exersice subject of this course, the Global Leadership Seminar II is opened in the second semester. ICourse objectives] The goal of this course is to improve student's comprehension and explanation capability for processes or proposal and expansion on the international market investigating worldwide leading companies by group work. ICourse schedule and contents] Week 1, Guidance Week 14, Pre-presentation Intensive students who want to join this course is requested to attend the f class. IEvaluation methods and policy] Studen
Course title (and course) title in English) Instructor's (abal Leadership Seminer 1(Study for methodology in a company)) Instructor's name, job title, and department of affiliation Graduate School of Engineerin Senior Lecturer, YOROZU KAZ Graduate School of Engineerin Senior Lecturer, KOMIYAMA YO Target year and year students or above (abal Leadership Seminer 1(Study for methodology in a company)) 1 Year/semesters po21/Intensive, year-rol or 21/Intensive, year-rol Days and periods Target year and year students or above (abal Leadership Seminer) Class style Seminar Lappage institute, etc. make propose and find solutions for expanding their own technologies to the international market. Throughout hands-oo training on their laboratory, students investigate the methodology of team organization, proposal, market prediction and conception ability by group works. After the investigation, students are expected to impro their comprehension and explanation capability. As extended exersice subject of this course, the Global Leadership Seminar II is opened in the second semester. ICourse objectives] The goal of this course is to improve student's comprehension and explanation capability for processes of proposal and expansion on the international market investigating worldwide leading companies by group work. ICourse schedule and contents] Week 1, Guidance Week 1, Final presentation Improve students who want to join this course is requested to attend the f class. IEvaluation methods and policy] Students are prohibited to skip hands-on t
Course ittile (and course) (ittie in English) Instructor's (ideal Leadening Seminer 1(Study for methodology in a company)) Instructor's name, job title, and department of affiliation Graduate School of Engineerin Senior Lecturer, YOROZU KAZ Graduate School of Engineerin Senior Lecturer, KOMIYAMA YO Target year and year students or above Days and periods Intensive Class style Seminar Lappa distinction Target year and year students or above Days and periods Intensive Class style Seminar Lappa distinction The purpose of this course is to study about how worldwide leading company, institute, etc. make propose and find solutions for expanding their own technologies to the international market. Throughout hands-ou training on their laboratory, students investigate the methodology of team organization, proposal, market prediction and conception ability by group works. After the investigation, students are expected to improv their comprehension and explanation capability. As extended exersice subject of this course, the Global Leadership Seminar II is opened in the second semester. ICourse objectives] The goal of this course is to improve student's comprehension and explanation capability for processes or proposal and expansion on the international market investigating worldwide leading companies by group work. ICourse schedule and contents] Week 1, Guidance Week 14, Pre-presentation Intensive students who want to join this course is requested to attend the f class. IEvaluation methods and policy] Studen
Course time Instructor's Graduate School of Engineeri Senior Lecturer, YOROZU KA: Graduate School of Engineeri Seniorucon and explanation capability for procesese or proposal and e
Course time: Instructor's Graduate School of Engineerin Senior Lecturer, YOROZU KAZ Graduate School of Engineerin Senior Lecturer, KOMIYAMA YO Target year Ind year students or above Number of credits 1 Year/semesters 2021/Intensive, year-r Days and periods Intensive Class style Seminar Image disturts Japanese [Overview and purpose of the course] The purpose of this course is to study about how worldwide leading company, institute, etc. make propose and find solutions for expanding their own technologies to the international market. Throughout hands-ctraining on their laboratory, students investigate the methodology of team organization, proposal, marke prediction and conception ability by group works. After the investigation, students are expected to impretheir comprehension and explanation capability. A sextended exersice subject of this course, the Global Leadership Seminar II is opened in the second semester. [Course objectives] The goal of this course is to improve student's comprehension and explanation capability for processes of proposal and expansion on the international market invesitigating worldwide leading companies by grou work. [Course schedule and contents] Week 1, Guidance Week 1, Guidance Week 2-13, Hands-on training Week 14, Pre-presentation Impresentation [Evaluati

	未更
コーバル・リーダーシップセミナー1(企業調査研究) (2)	Course number U-ENG20 32502 SE77
leferences, etc.]	Course title Instructor's
Reference books)	(and course) 工学部国際インターンシップ2 title in English) Faculty of Engineering International Internship 2 Approved
Related URLs)	Target year Brd year students or above Number of credits 2 Year/semesters 2021/Intensive, year-relation
//www.glc.t.kyoto-u.ac.jp/ugrad	Days and periods Intensive Class style Seminar Language distructor Japanese and Eng
udy outside of class (preparation and review)]	[Overview and purpose of the course]
stigating companies in advance. Analyzing the result from hands-on training. Preparing presentation.	Acquisition of international skills with wth the training of foreign language through the participation to the international internship programs held by the Faculty of Engineering or its subsidiary bodies.
ther information (office hours, etc.)) v to register will be announced later. Students who want to join this course is requested to attend the first	[Course objectives]
S. Students are prohibited to skip hands-on training. Evaluation will be based on presentation.	The acquisition of international and foreign language skills through the participation to international
ase visit KULASIS to find out about office hours.	programs is expected. Detailed objectives of the participation should be identified by each program.
urses delivered by instructors with practical work experience]	[Course schedule and contents] Overseas Internship, 1 time, The contents to be acquired should be described in the brochure of each inter
ategory mnibus course delivered by invited lecturers and guest speakers from different companies, etc.	program. Final Presentation, Itime, A presentation by the student is required followed by discussion among partici
etails of instructors' practical work experience related to the course	
	[Course requirements]
Details of practical classes delivered based on instructors' practical work experience	Described in the application booklet for each internship program. The registrant is requested to have enclanguage skills for the participation.
	[Evaluation methods and policy] Marit rating is done based on the presentation or reports after each internship program. Each Departme
	responsible to identify if the credit earned by this subject to be included as mandatory ones or not. If the credit is not included in the undergraduate school in which the participant belongs to, the credit is granted as the second
	the Global Leadership Education Center as a optional credit. The number of credits, either 1 or 2, will b determined depending on the contents and the duration of the program that the participant has participant
	[Textbooks]
	Continue to 19 mais 177 77772
全部国際インターンシップ 2 (2) Sferences, etc.]	(and course グローバル・リーダーシップセミナーII(イノベーションとその事業化) name, job title, Senior Lecturer, KANEKO KENT
ferences, etc.]	Course title (and course) title in English) Global Leadership Seminar II (Imovation and is commercialization) Global Leadership Seminar II (Imovation and Is commercialization)
ferences, etc.] Reference books)	Course title (and course) title in English) Global Leadership Seminar II (Innovation and is commercialization) Global Leadership Seminar II (Innovation and is commercialization)
ferences, etc.] Reference books)	Course title (and course title in English) Tarciet wear bal were thident or show Number of credits 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
ferences, etc.] Reference books) udy outside of class (preparation and review)]	Course title (and course title in English) Target year 2nd year students or above Number of credits 1 Days and periods Intensive Class style Seminar II(からしいないのの) Class style Seminar II(からしいのの) Class style Seminar II(からしいのの) Class style Seminar II(からしいのの) Seminar II(からしいの) Seminar II(からしいの) Seminar II(からしいのの) Seminar II(からしいの) Seminar II(からしいの) Semi
ferences, etc.] Reference books) Indy outside of class (preparation and review)] Inher information (office hours, etc.)) required for students to check if the internship program to participate in could be evaluated as part of	Course title (and course title in English) Target year 2nd year students or above Days and periods Intensive Class style Seminar II (Intensive, Second Days and periods Intensive Class style Seminar II (Intensive, Second Days and periods Intensive Class style Seminar II (Intensive, Second Days and periods Intensive Class style Seminar II (Intensive, Second Days and periods Intensive Class style Seminar II (Intensive, Second This course is a small-group workshop program where students are supposed to extract or set up challer by themselves aiming at creating new social values. In concrete, abilities of planning and problem-solvi
ferences, etc.] Reference books) idy outside of class (preparation and review)] ther information (office hours, etc.)) required for students to check if the internship program to participate in could be evaluated as part of blatory credits or not and could earn how many credits before the participation to the undergraduate of or educational program the student in enrolled. If the credit could not be treated as mandatory ones,	Course title (and course title in English) ガローバル・リーダーシップゼミナー目(イノペーションとその弊能) Good Leadership Seminar II (Innovation and its commercialization of affiliation Instructor's name, job title, and department of affiliation Graduate School of Engineeri Senior Lecturer, KANEKO KENT Graduate School of Engineeri Senior Lecturer, KANEKO KENT Graduate School of Engineeri Senior Lecturer, TAKATSU HI Target year Ind year students or above Number of credits 1 Year/semesters 2021/Intensive, Secon emester Days and periods Intensive Class style Seminar Izquapt distude Japanese This course is a small-group workshop program where students are supposed to extract or set up challer by themselves aiming at creating new social values. In concrete, abilities of planning and problem-solvi trained through group works in residential training and skills of presentation and communication are enhanced through oral presentations regarding contents of the proposal at each step of the process from
ferences, etc.] Reference books) idy outside of class (preparation and review)] ther information (office hours, etc.)) required for students to check if the internship program to participate in could be evaluated as part of fatory credits or not and could earn how many credits before the participation to the undergraduate ol or educational program the student in enrolled. If the credit could not be treated as mandatory ones, a touch with the Global Leadership Engineering Education Center.	Course title (and course title in English) Target year 2nd year students or above Number of credits 1 Days and periods Intensive Class style Seminar Untensive Second the course is a small-group workshop program where students are supposed to extract or set up challen by themselves aiming at creating new social values. In concrete, abilities of planning and problem-solvi trained through group works in residential training and skills of presentation and communication are
ferences, etc.] Reference books) idy outside of class (preparation and review)] ther information (office hours, etc.)) required for students to check if the internship program to participate in could be evaluated as part of fatory credits or not and could earn how many credits before the participation to the undergraduate ol or educational program the student in enrolled. If the credit could not be treated as mandatory ones, a touch with the Global Leadership Engineering Education Center.	Course title (and course) ガローバル・リーダーシップゼミナーII(イバーションとその募集化) (Bobul Leadership Seminar II (Innovation and its commercialization) Instructor's name, job title, and dopartment of affiliation Graduate School of Engineerin Senior Lecturer, KANEKO KENT Graduate School of Engineerin Senior Lecturer, TAKATSU HII Target year Ind year students or above Number of credits 1 Year/semesters 2021/Intensive, Secon semester Days and periods Intensive Class style Seminar Impute violation Japanese [Overview and purpose of the course] This course is a small-group workshop program where students are supposed to extract or set up challen by themselves aiming at creating new social values. In concrete, abilities of planning and problem-solvi trained through oral presentations regarding contents of the proposal at each step of the process from preliminary draft to its completion. [Course objectives] [Course]
erences, etc.] teference books) dy outside of class (preparation and review)] her information (office hours, etc.)) equired for students to check if the internship program to participate in could be evaluated as part of latory credits or not and could earn how many credits before the participation to the undergraduate ol or educational program the student in enrolled. If the credit could not be treated as mandatory ones, touch with the Global Leadership Engineering Education Center. se visit KULASIS to find out about office hours. urses delivered by instructors with practical work experience]	Course title (and course) ガローバル・リーダーシップゼミナーII(イバーションとその非能) Global Leadership Seminar II (Imovation and is commercialization Big Seminar II (Imovation and is commercialization of affiliation Instructor's name, job title, and department of affiliation Graduate School of Engineeri Senior Lecturer, KANEKO KENT Graduate School of Engineeri Senior Lecturer, TAKATSU HI Target year Ind year students or above Number of credits 1 Year/semesters 2021/Intensive, Secon remester Days and periods Intensive Class style Seminar Japanese [Overview and purpose of the course] This course is a small-group workshop program where students are supposed to extract or set up challer by themselves aiming at creating new social values. In concrete, abilities of planning and problem-solvi trained through group works in residential training and skills of presentation and communication are enhanced through oral presentations regarding contents of the proposal at each step of the process from preliminary draft to its completion. [Course objectives]
ferences, etc.] Reference books) idy outside of class (preparation and review)] ther information (office hours, etc.]) required for students to check if the internship program to participate in could be evaluated as part of fatory credits or not and could earn how many credits before the participation to the undergraduate ol or educational program the student in enrolled. If the credit could not be treated as mandatory ones, a touch with the Global Leadership Engineering Education Center. ase visit KULASIS to find out about office hours. urses delivered by instructors with practical work experience] ategory	Course title (and course (オローバル・リーダーショブゼミナーII(イバーションとその等楽化) Global Leadership Seminar II (Innovation and its commercialization of affiliation Instructor's name, job title, and department of affiliation Graduate School of Engineerin Senior Lecturer, KANEKO KENT Graduate School of Engineerin Senior Lecturer, TAKATSU HI Target year Ind year students or above Number of credits 1 Year/semesters 2021/Intensive, Secon semester Days and periods Intensive Class style Seminar zaquaga distution Japanese [Overview and purpose of the course] This course is a small-group workshop program where students are supposed to extract or set up challen by themselves aiming at creating new social values. In concrete, abilities of planning and problem-solvi trained through group works in residential training and skills of presentation and communication are enhanced through oral presentations regarding contents of the proposal at each step of the process from preliminary draft to its completion. [Course objectives] Ability of planning, from extraction or setting up challenges to proposal of solutions aiming at creating resocial values, is trained through group works.
interences, etc.] teference books) idy outside of class (preparation and review)] her information (office hours, etc.)) equired for students to check if the internship program to participate in could be evaluated as part of latory credits or not and could earn how many credits before the participation to the undergraduate of or educational program the student in enrolled. If the credit could not be treated as mandatory ones, a touch with the Global Leadership Engineering Education Center. use visit KULASIS to find out about office hours. urses delivered by instructors with practical work experience] ategory urse that includes off-campus training classes.	Course title (and course title in English) Instructor's (Jローバリ・リーダーシップナをナーII(イバーションとその単発化) (and department of affiliation Graduate School of Engineeri Senior Lecturer,KANEKO KENT Graduate School of Engineeri Senior Lecturer,TAKATSU HI Target year End year students or above And year students or above Days and periods Number of credits 1 Year/semesters 2021/Intensive, Secon semester Days and periods Intensive Class style Seminar Imposed to extract or set up challenges This course is a small-group works in residential training and skills of presentation and communication are enhanced through oral presentations regarding contents of the proposal at each step of the process from preliminary draft to its completion. [Course objectives] Ability of planning, from extraction or setting up challenges to proposal of solutions aiming at creating
ferences, etc.] Reference books) udy outside of class (preparation and review)] ther information (office hours, etc.)) required for students to check if the internship program to participate in could be evaluated as part of datory credits or not and could earn how many credits before the participation to the undergraduate ol or educational program the student in enrolled. If the credit could not be treated as mandatory ones, n touch with the Global Leadership Engineering Education Center. ase visit KULASIS to find out about office hours. burses delivered by instructors with practical work experience] Category burse that includes off-campus training classes. Details of instructors' practical work experience related to the course	Course title (and course title in English) グローバリ・リーダーシップだミナーII(イバーションとその単単化) (abdul Leadership Semiar II (Innovation and its commercialization) Instructor's name, job title, and department of affiliation Graduate School of Engineerin Senior Lecturer,KANEKO KENT Graduate School of Engineerin Senior Lecturer,TAKATSU HII Target year 2nd year students or above Number of credits 1 Year/semesters 2021/Intensive, Secon termsster Days and periods Intensive Class style Seminar anguagetistude Japanese [Overview and purpose of the course] This course is a small-group workshop program where students are supposed to extract or set up challen by themselves aiming at creating new social values. In concrete, abilities of planning and problem-solvi trained through group works in residential training and skills of presentation and communication are enhanced through oral presentations regarding contents of the proposal at each step of the process from a preliminary draft to its completion. [Course objectives] Ability of planning, from extraction or setting up challenges to proposal of solutions aiming at creating re social values, is trained through group works. [Course schedule and contents] ** Depending on the situation of COVID-19 pandemic, all lectures will be given online and residential training will be canceled.
	Course title and course title in English) Instructor's didul Leadership Semiar II (Invovation and is commercialization) Instructor's name, job title, and department of affiliation Graduate School of Engineerin Senior Lecturer, KANEKO KENT Graduate School of Engineerin Senior Lecturer, TAKATSU HII Target year End year students or above Number of credits 1 Year/semesters 2021/Intensive, Secon termster Days and periods Intensive Class style Seminar zagag distude to the course] 2021/Intensive, Secon termster This course is a small-group workshop program where students are supposed to extract or set up challen by themselves a aiming at creating new social values. In concrete, abilities of planning and problem-solvi trained through group works in residential training and skills of presentation and communication are enhanced through oral presentations regarding contents of the proposal at each step of the process from a preliminary draft to its completion. [Course objectives] Ability of planning, from extraction or setting up challenges to proposal of solutions aiming at creating p social values, is trained through group works. [Course schedule and contents] ** Depending on the situation of COVID-19 pandemic, all lectures will be given online and residential
ferences, etc.] Reference books) udy outside of class (preparation and review)] ther information (office hours, etc.)) required for students to check if the internship program to participate in could be evaluated as part of datory credits or not and could earn how many credits before the participation to the undergraduate ol or educational program the student in enrolled. If the credit could not be treated as mandatory ones, n touch with the Global Leadership Engineering Education Center. ase visit KULASIS to find out about office hours. urses delivered by instructors with practical work experience] ategory urse that includes off-campus training classes. Details of instructors' practical work experience related to the course	Course title (and course) ガー・バリ・リーダーシップだミナーII(イバーションとその事業化) (abd) Ledeship Seminr II (Introvation and its commercialization) Instructor's name, job title, and department of affiliation Graduate School of Engineerin Senior Lecturer, KANEKO KENT Graduate School of Engineerin Senior Lecturer, TAKATSU HI Target year 2nd year students or above Number of credits 1 Year/semester 2021/Intensive, Secon Semistr Days and periods Intensive Class style Seminar angugs/listude Japanese [Overview and purpose of the course] This course is a small-group workshop program where students are supposed to extract or set up challen by themselves aiming at creating new social values. In concrete, abilities of planning and problem-solvi trained through group works in residential training and skills of presentation and communication are enhanced through and presentations regarding contents of the proposal at each step of the process from preliminary draft to its completion. [Course schedule and contents] ※Depending on the situation of COVID-19 pandemic, all lectures will be given online and residential training will be canceled. Orientation, ltime, A brief overview and a schedule of the course are explained and working groups are organized. Course s are given.
ferences, etc.] Reference books) ther information (office hours, etc.)) required for students to check if the internship program to participate in could be evaluated as part of datory credits or not and could earn how many credits before the participation to the undergraduate ol or educational program the student in enrolled. If the credit could not be treated as mandatory ones, a touch with the Global Leadership Engineering Education Center. ase visit KULASIS to find out about office hours. urses delivered by instructors with practical work experience] ategory urse that includes off-campus training classes. Details of instructors' practical work experience related to the course	Course title (and course) Course title (bit in course) Course title (bit in course) Instructor's (bit in course) Graduate School of Engineerin Senior Lecturer,KANEKO KENT Graduate School of Engineerin Senior Lecturer,TAKATSU HI (and department of affiliation Graduate School of Engineerin Senior Lecturer,TAKATSU HI (and geartment of affiliation Target year End year students or above Part Style Number of credits 1 Year/semester 2021/Intensive, Secon semester Days and periods Intensive Class style Seminar zagag distudent semester 2021/Intensive, Secon semester Days and periods Intensive Class style Seminar zagag distudent semester 2021/Intensive, Secon semester This course is a small-group works in residential training and skills of presentation and communication are enhanced through group works in residential training and skills of presentation and communication are enhanced through oral presentations regarding contents of the proposal of solutions aiming at creating re social values, is trained through group works. ICourse schedule and contents] *Depending on the situation of COVID-19 pandemic, all lectures will be given online and residential training will be canceled. Orientation, 1 time, A brief overview and a schedule of the course are explained and working groups are organized. Corent to problems, collecting information, and group ware done.
ferences, etc.] Reference books) ther information (office hours, etc.)) required for students to check if the internship program to participate in could be evaluated as part of datory credits or not and could earn how many credits before the participation to the undergraduate ol or educational program the student in enrolled. If the credit could not be treated as mandatory ones, a touch with the Global Leadership Engineering Education Center. ase visit KULASIS to find out about office hours. urses delivered by instructors with practical work experience] ategory urse that includes off-campus training classes. Details of instructors' practical work experience related to the course	Course title and course title in English) Instructor's didul Ledeship Semiar II (Invovation and its commercialization) Instructor's name, job title, and department of affiliation Graduate School of Engineerin Senior Lecturer, KANEKO KENI Graduate School of Engineerin Senior Lecturer, TAKATSU HI Target year Ind year students or above Number of credits 1 Year/semesters 2021/Intensive, Secon consector Days and periods Intensive Class style Seminar Impaged instructor's and generation 3021/Intensive, Secon consector This course is a small-group workshop program where students are supposed to extract or set up challen by themselves aiming at creating new social values. In concrete, abilities of planning and problem-solvi trained through argoup works in residential training and skills of presentation and communication are enhanced through oral presentations regarding contents of the proposal at each step of the process from preliminary draft to its completion. [Course objectives] Ability of planning, from extraction or setting up challenges to proposal of solutions aiming at creating social values, is trained through group works. [Course schedule and contents] % Depending on the situation of COVID-19 pandemic, all lectures will be given online and residential training will be canceled. Orientation, Itime, A brief overview and a schedule of the course are explained and working groups are organized. Lectures, Ztimes, Lectures by experts are given. Group works, Stimes, Setting up challenges, extraction of problems, coll
ferences, etc.] Reference books) ther information (office hours, etc.)) required for students to check if the internship program to participate in could be evaluated as part of datory credits or not and could earn how many credits before the participation to the undergraduate ol or educational program the student in enrolled. If the credit could not be treated as mandatory ones, a touch with the Global Leadership Engineering Education Center. ase visit KULASIS to find out about office hours. urses delivered by instructors with practical work experience] ategory urse that includes off-campus training classes. Details of instructors' practical work experience related to the course	Course title title in English) Course title dibul Leadeship Semiar II (IMOv4j3ンとその事業に) Gibul Leadeship Semiar II (Imovation and its commercialization of affiliation Instructor's name, job title, and department of affiliation Graduate School of Engineerin Senior Lecturer, KANEKO KENT Graduate School of Engineerin Senior Lecturer, TAKATSU HI Target year End year students or above Number of credits 1 Year/semester 2021/Intensive, Secon semester Days and periods Intensive Class style Seminar zagag distude Japanese COverview and purpose of the course] This course is a small-group workshop program where students are supposed to extract or set up challen by themselves aiming at creating new social values. In concrete, abilities of planning and problem-solvi trained through oral presentations regarding contents of the proposal of solutions aiming at creating re- social values, is trained through group works. ICourse objectives] Ability of planning, from extraction or setting up challenges to proposal of solutions aiming at creating re- social values, is trained through group works. ICourse schedule and contents] *Depending on the situation of COVID-19 pandemic, all lectures will be given online and residential training will be canceled. Orientation, I time, A brief overview and a schedule of the course are explained and working groups are organized. Cerures, Zitmes, Setting up challenges, extraction of problems, collecting information, and group w are done. Reside
ferences, etc.] Reference books) udy outside of class (preparation and review)] ther information (office hours, etc.)) required for students to check if the internship program to participate in could be evaluated as part of datory credits or not and could earn how many credits before the participation to the undergraduate ol or educational program the student in enrolled. If the credit could not be treated as mandatory ones, n touch with the Global Leadership Engineering Education Center. ase visit KULASIS to find out about office hours. urses delivered by instructors with practical work experience] ategory urse that includes off-campus training classes. Details of instructors' practical work experience related to the course	Course title and course title in English) Instructor's Global Leadeship Semiar II (Invovation and its commercialization of affiliation Graduate School of Engineerin Senior Lecturer, KANEKO KENI Graduate School of Engineerin Senior Lecturer, TAKATSU HI Course is a small-group works style Target year Ind year students or above Part and year students or above Days and periods Number of credits 1 Year/semesters 2021/Intensive, Secon permester Days and periods Intensive Class style Seminar arguage distution Japanese [Overview and purpose of the course] This course is a small-group workshop program where students are supposed to extract or set up challen by themselves aiming at creating new social values. In concrete, abilities of planning and problem-solvi trained through argoup works in residential training and skills of presentation and communication are enhanced through oral presentations regarding contents of the proposal at each step of the process from preliminary draft to its completion. [Course objectives] Ability of planning, from extraction or setting up challenges to proposal of solutions aiming at creating social values, is trained through group works. [Course schedule and contents] % Depending on the situation of COVID-19 pandemic, all lectures will be given online and residential training will be canceled. Orientation, Itime, A brief overview and a schedule of the course are explained and working groups are organized. Lectures, Zittines, Lectures by experts are given. </td
ferences, etc.] Reference books) udy outside of class (preparation and review)] ther information (office hours, etc.)) required for students to check if the internship program to participate in could be evaluated as part of datory credits or not and could earn how many credits before the participation to the undergraduate ol or educational program the student in enrolled. If the credit could not be treated as mandatory ones, n touch with the Global Leadership Engineering Education Center. ase visit KULASIS to find out about office hours. burses delivered by instructors with practical work experience] Category burse that includes off-campus training classes. Details of instructors' practical work experience related to the course	Course title title in English) function is instructor's Global Leadeship Seminr II (Introvation and its commercialization) Instructor's name, job title, and department of affiliation Graduate School of Engineerin Senior Lecturer, KANEKO KENT Graduate School of Engineerin Senior Lecturer, TAKATSU HII Target year End year students or above Number of credits 1 Year/semesters 2021/Intensive, Secon semester Days and periods Intensive Class style Seminar graduate School of Engineerin Senior Lecturer, TAKATSU HII This course is a small-group workshop program where students are supposed to extract or set up challen by themselves aiming at creating new social values. In concrete, abilities of planning and problem-solvi trained through oral presentations regarding contents of the proposal of solutions aiming at creating re- social values, is trained through group works. [Course objectives] Ability of planning, from extraction or setting up challenges to proposal of solutions aiming at creating re- social values, is trained through group works. [Course schedule and contents] *Depending on the situation of COVID-19 pandemic, all lectures will be given online and residential training will be canceled. Orientation, 1 time, A brief overview and a schedule of the course are explained and working groups are organized. Cecures, 2 times, Secting up challenges, extraction of problems, collecting information, and group ware done. Residential training, 7 times, Through intensive group works based on discussion,
ferences, etc.] Reference books) udy outside of class (preparation and review)] ther information (office hours, etc.)) required for students to check if the internship program to participate in could be evaluated as part of datory credits or not and could earn how many credits before the participation to the undergraduate ol or educational program the student in enrolled. If the credit could not be treated as mandatory ones, n touch with the Global Leadership Engineering Education Center. ase visit KULASIS to find out about office hours. burses delivered by instructors with practical work experience] Category burse that includes off-campus training classes. Details of instructors' practical work experience related to the course	Course title and course if the fight in fight in the intervence in the intervence in the intervence intervence in the intervence inter
ferences, etc.] Reference books) udy outside of class (preparation and review)] ther information (office hours, etc.)) required for students to check if the internship program to participate in could be evaluated as part of datory credits or not and could earn how many credits before the participation to the undergraduate ol or educational program the student in enrolled. If the credit could not be treated as mandatory ones, n touch with the Global Leadership Engineering Education Center. ase visit KULASIS to find out about office hours. urses delivered by instructors with practical work experience] ategory urse that includes off-campus training classes. Details of instructors' practical work experience related to the course	Course title (and course) The パレッサーチーシップだミナーII(パハーションとその算影に) (abul Leadeship Semiar II (Invostion and its commercialization) Instructor's name, job title, and department of affiliation Graduate School of Engineerin Senior Lecturer,KANEKO KENT Graduate School of Engineerin Senior Lecturer,TAKATSU HI Target year End year students or above Number of credits 1 Year/semesters 2021/Intensive, Secon semester Days and periods Intensive Class style Seminar arguage/instruct Japanese [Overview and purpose of the course] This course is a small-group workshop program where students are supposed to extract or set up challen by themselves aiming at creating new social values. In concrete, abilities of planning and problem-solvi trained through oral presentations regarding contents of the proposal of solutions aiming at creating re- social values, is trained through group works. [Course objectives] Ability of planning, from extraction or setting up challenges to proposal of solutions aiming at creating re- social values, is trained through group works. [Course schedule and contents] ** Depending on the situation of COVID-19 pandemic, all lectures will be given online and residential training will be canceled. Orientation, I time, A brief overview and a schedule of the course are explained and working groups are organized. Cectures, Stimes, Setting up challenges, extraction of problems, collecting information, and group wo are done. Residential training, 7times, Through in
ferences, etc.] Reference books) udy outside of class (preparation and review)] ther information (office hours, etc.)) required for students to check if the internship program to participate in could be evaluated as part of datory credits or not and could earn how many credits before the participation to the undergraduate ol or educational program the student in enrolled. If the credit could not be treated as mandatory ones, n touch with the Global Leadership Engineering Education Center. ase visit KULASIS to find out about office hours. burses delivered by instructors with practical work experience] Category burse that includes off-campus training classes. Details of instructors' practical work experience related to the course	Course title title in English) ft=-f(s)+1)-f=>y7fEt+=[[(f/A=>3>EEN](f)], and department of affiliation Graduate School of Engineerin Senior Lecturer,KANEKO KENT Graduate School of Engineerin Senior Lecturer,TAKATSU HII Target year rad year students or above Number of credits 1 Year/semesters 2021/Intensive, Secon Commentation Days and periods Intensive Class style Seminar argang distude Japanese [Overview and purpose of the course] This course is a small-group workshop program where students are supposed to extract or set up challen by themselves aiming at creating new social values. In concrete, abilities of planning and problem-solvit trained through oral presentations regarding contents of the proposal at each step of the process from a preliminary draft to its completion. [Course objectives] Ability of planning, from extraction or setting up challenges to proposal of solutions aiming at creating us social values, is trained through group works. [Course schedule and contents] % Depending on the situation of COVID-19 pandemic, all lectures will be given online and residential training will be canceled. Orientation, Itime, A brief overview and a schedule of the course are explained and working groups are organized. Lectures, Zitmes, Setting up challenges, extraction of problems, collecting information, and group work are done. Residential training, 7times, Through intensive group works based on discussion, a proposal for solving problems is placed, and reportis made, and a few presentations are made.
ferences, etc.] Reference books) udy outside of class (preparation and review)] ther information (office hours, etc.)) required for students to check if the internship program to participate in could be evaluated as part of datory credits or not and could earn how many credits before the participation to the undergraduate ol or educational program the student in enrolled. If the credit could not be treated as mandatory ones, n touch with the Global Leadership Engineering Education Center. ase visit KULASIS to find out about office hours. burses delivered by instructors with practical work experience] Category burse that includes off-campus training classes. Details of instructors' practical work experience related to the course	Course title (and course title in English) ////////////////////////////////////
ferences, etc.] Reference books) ther information (office hours, etc.)) required for students to check if the internship program to participate in could be evaluated as part of datory credits or not and could earn how many credits before the participation to the undergraduate ol or educational program the student in enrolled. If the credit could not be treated as mandatory ones, a touch with the Global Leadership Engineering Education Center. ase visit KULASIS to find out about office hours. urses delivered by instructors with practical work experience] ategory urse that includes off-campus training classes. Details of instructors' practical work experience related to the course	Course time ft=-i(k+1)-f=-y+f+2}=11(1/A-y=2)/2E0FR[t], name, job tite, and department Graduate School of Engineerin Senior Lecturer, XANEKO KENT Graduate School of Engineerin Senior Lecturer, TAKATSU HI Target year Ind year students or abov Number of credits 1 Year/semesters 2021/Intensive. Second creative School of Engineerin Senior Lecturer, TAKATSU HI Target year Ind year students or abov Number of credits 1 Year/semesters 2021/Intensive. Second creative School of Engineerin Senior Lecturer, TAKATSU HI Target year Ind year students or abov Number of credits 1 Year/semesters 2021/Intensive. Second creative School of Fingueerin Second School of Planning and Problem-solvit trained through group works. ICourse objectives] Ability of planning, from extraction or setting up challenges to proposal of solutions aiming at creating social values, is trained through group works. ICourse schedule and contents] *Depending on the situation of COVID-19 pandemic, all lectures will be given online and residential training will be canceled. Orientation, Itime, A brief overview and a schedule of the course are explained and working group ware of one done. Prelimi
erences, etc.] teference books) dy outside of class (preparation and review)] her information (office hours, etc.)) equired for students to check if the internship program to participate in could be evaluated as part of latory credits or not and could earn how many credits before the participation to the undergraduate ol or educational program the student in enrolled. If the credit could not be treated as mandatory ones, touch with the Global Leadership Engineering Education Center. se visit KULASIS to find out about office hours. urses delivered by instructors with practical work experience] ategory arse that includes off-campus training classes. etails of instructors' practical work experience related to the course	Course title (and course title in English) [Ta=tV_1+]=-\$-y=7t=3+2t=0\$\$\$\$\$\$\$\$\$\$\$\$ if it is name, job title, Gidual Ledership Semiar II (Innovation and is connecticilization) of affiliation Graduate School of Engineerir Senior Lecturer,TAKATSU HII Graduate School of Engineerir Senior Lecturer,TAKATSU HII Target year and year students or above Number of credits 1 Year/Semesters D02/Intensive, Secon emester Days and periods Intensive Class style Seminar Lapage#Intentsion Japanese Days and periods Intensive Class style Seminar Lapage#Intentsion Japanese Days and periods Intensive Class style Seminar Lapage#Intentsion Japanese Doverview and purpose of the course] This course is a small-group workshop program where students are supposed to extract or set up challen by themselves aiming at creating new social values. In concrete, abilities of planning and problem-solvin trained through group works in residential training and skills of presentation and communication are enhanced through group morks. [Course objectives] Ability of planning, from extraction or setting up challenges to proposal of solutions aiming at creating us social values, is trained through group works. [Course checkle and contents] *Depending on the situation of COVID-19 pandemic, all lectures will be given online and residential training will be canceled. Orientation, I time, A brief overview and a

	Course number U-ENG26 16003 LJ72
al is made through presentation of the proposal as well as a submitted report.	Course title Instructor's
	(and course) 電気電子回路 name, job title, and department Graduate School of Engineering Professor,WADA OSAMI
xtbooks] be indicated as necessary.	English) of affiliation
	Target year Ist year students or above Number of credits 2 Year/semesters 2021/Second seme:
ferences, etc.]	Days and periods Mon.5 Class style Lecture Language distudior Japanese
Reference books) be indicated as necessary.	[Overview and purpose of the course]
be indicated as necessary.	The first half of the course discusses the basics of three phase circuits, methods of analyzing passive circuit
udy outside of class (preparation and review)]	that include transformers, and the construction of systematic circuit formulas. The second half explains
be indicated as necessary.	methods of analyzing circuits that include active components, such as transistors, using electric circuit theor then describes the handling of frequency characteristics of circuits and basic switching operations of
ther information (office hours, etc.))	transistor circuits.
rse open period: October to January	[Course objectives]
depends on divisions which students belong to whether the earned credits are admitted as credits required	Review basic knowledge on handling of electric circuits, and develop the ability to analyze basic electric
raduation. Please refer to the syllabus of your division.	 circuits. Understand the basics of three phase circuits.
ase visit KULASIS to find out about office hours.	Understand circuits that include independent voltage and current sources and controlled sources, as well
	equivalent circuits of transformers. Understand handling of frequency characteristics of circuits.
urses delivered by instructors with practical work experience]	Understand methods to analyze nonlinear circuits including active components as linear circuits.
Category	Understand the basic operation of semiconductor devices.
	[Course schedule and contents]
letails of instructors' practical work experience related to the course	(1-2) Basics of three phase circuits, [2 classes]: Following up on Basic Theory of Electric Circuits (60630), review the representation of sine waves in
Details of practical classes delivered based on instructors' practical work experience	complex form, and explain the basics of single phase three wire circuits and symmetrical three phase circui (3-6) Passive circuit analysis methods, [4 classes]: Explain handling of circuits using Thevenin's theorem and Norton's theorem, equivalent sources and
	equivalent circuits. Explain mutual inductance and transformers; equivalent circuits, the coupling factor, ideal transformer, impedance conversion, analysis of circuits including transformers.
	(7-8) Circuit equations, [2 classes]:
	Explain construction of the loop equations and the nodal equations that can realize systematic circuit analysis even when very large number of elements are included.
	(9) Basics of semiconductor, [1 class]:
	Explain p-n junctions of semiconductors that make up diodes, transistors, etc., as well as their basic characteristics.
	(10-11) Active circuit analysis, [2 classes]:
	Explain DC biasing for linear operation of electron tubes, transistors, etc. as well as AC small signal equivalent circuits for handling amplification of signals, etc., and explain the concept of controlled voltage
	sources and controlled current sources, and methods of analyzing electronic circuits using linear circuit
	theory.
	Continue to 電気電子回路(2)↓

 [12-13] Frequency characteristics of electronic circuits, [2 classes]: Explain dB (decibel) notation for representing the radio of electric power, voltage, current, etc., and describe the frequency characteristics of simple amplifier circuits. [14] Basics of semiconductors and binary operation of active circuits, [1 class]: Describe transistor's switching operation. [15] Confirmation of learning attainment, [1 class]: Confirm the degree of learning attained in the course.
[Course requirements]
Students should have learned the content of Basic Theory of Electric Circuits (60630), or an equivalent basic course in electric circuits. It is not required to have obtained credits from the above courses.
[Evaluation methods and policy]
Evaluation will be based on final examination grade. Report topics will be assigned in class, and reports on these themes will be factored into the final grade.
[Textbooks]
奥村浩士:電気回路理論(朝倉書店) isbn{} {9784254220490}, Also, printouts are distributed ("Course materials" on KULASIS)
[References, etc.]
(Reference books) その他,柳沢: 回路理論基礎(電気学会大学講座)(電気学会)ISBN: 9784886862044 ibid{}{ TW86015136} 北野:電子回路の基礎(培風館)isbn{}{456303553X} 北野:電子回路の基礎(http://www.kuce.kyoto-u.ac.jp/~kitano/ec/)(レイメイ社)ibid{}{BB04087527}
[Study outside of class (preparation and review)]
"Course materials" are uploaded to KULASIS, so please download and refer to them as appropriate.
(Other information (office hours, etc.))
After class (Monday, second period), I will be available to answer questions at the Yoshida Campus. Questions are also welcomed by email.
*Please visit KULASIS to find out about office hours.

	1									木史新		
Course nur	mber	U-EN	G26 20	5008 LJ57	U-EN	G26	5 26008	LJ72				
	nd course 電磁気学 1 le in Electromagnetic Theory 1						tructor's ne, job til d departm affiliation		Graduate School of Engineering Professor,MATSUO TETSUJI			
Target year	2nd y	ear students o	Yea	r/semesters	2021/Second semester							
Days and period	ls Fri.2		Class	s style	Lectur	e			Language of instruction	Japanese		
[Overview a	and pu	irpose o	f the	course]								
Students will and magnetos				, electrosta	tic ener	gy,	electrost	atic fo	orce in vacuur	n and dielectric media,		
[Course ob	jective	es]										
To understand	d basics	of the ele	ectrost	atics in va	cuum an	ıd di	electric	media	, and the mag	netostatics in vacuum.		
[Course sc	hedule	and co	ntent	s]								
1. Electrostati	ic fields	in vacuu	m (2-3	3 times)								
2. Electrostati	ic fileds	in dielec	tric m	edia (2-3 ti	mes)							
3. Electrostati	ic energ	y, Electro	ostatic	filed and b	oundary	y val	lue prob	lems i	n electrostatio	fields (5-6 times)		
4. Steady-stat	e currer	nts and m	agneto	static field	ls in vac	uum	1 (3-4tin	ies)				
5. Academic a			0				(-	<i>,</i>				
			(1 um	ie)								
[Course red	•	ients]										
Vector Analy	\$15											
[Evaluation	n meth	ods and	polic	;y]								
By a term exa	aminatio	on (raw so	core)									
[Textbooks	5]											
島崎・松尾	『電磁	気学』										
[Reference												
(Referen	ce boo	ks)										
[Study outs	side of	class (r	rena	ration an	d revie	w)1						
-	0.00 01	01000 ()		anon an		-•/]						
(Other info	ormatio	on (offic	e hou	irs, etc.))			_					
*Please visit l	KULAS	SIS to find	l out a	bout office	e hours.							

Course number U-ENG26 36009 LJ72 U-EN	G26 36009 LJ57			Cou	rse num	ber U-EN	NG26 26	010 LJ72					
purse title nd course fe in (glish) Electromagnetic Theory 2	Course title (and course title in English) 目在Circuits Instructor's Electronic Circuits of affiliation of affiliation Graduate School of Engin Associate Professor,SUGIYAM/												
rget year Brd year students or above Number of cred	lits 2 Yea	r/semesters	2021/First semester	Targe	t year	2nd year students	s or above	Number	of credits	2	Year/ser	nesters	2021/First semester
s and periods Mon.2 Class style Lectur	re	Language of instruction []	Japanese	Dave ar	nd periods	Fri 2	Class	etvlo	Lecture		lann	uage of instruction	Japanese
Overview and purpose of the course]	-		apanese			nd purpose			Lecture		Langi	uage of histraction	Japanese
idents will learn ferromagnetic media, electromagne uations and electromagnetic wave.	tic force, electron	nagnetic inducti	on, Maxwell's	Follow Circuit negativ	ving the tsquot, n ve feedb	lecture of fund nodeling of act ack in circuits,	lamental tive devi , operati	s of active ses, funda onal ampl	imentals of ifiers, and o	transisto oscillator	r circuits, v s are lectur	various an ed. Nonli	ic and Electronic plifier circuits, near circuits, power
understand basics of the electromagnetics: ferromagnetic was duction, Maxwell's equations and electromagnetic was		tromagnetic for	ce, electromagnetic	supplie	es, and n	oise would be	include	d in the co	ourse, when	the lectu	ire time rei	nains.	
course schedule and contents]	ave.			-		ectives]							
rromagnetic media (3 times) ectromagnetic force (2-3 times) ectromagnetic induction (3-4 times)				fundar fundar give th unders	mental co mental co ne studen standing	oncept of elect oncept proceed its an ability to	ronic cir ls step b o underst tals. The	cuits i.e., y step to u and the pr main targ	modeling of inderstand rinciples of gets to be u	of active of electric con more con inderstood	levices, the ircuits. In t mplicated of	e lecture b his style, circuits by	th understanding of based on the the lecturer wants to application of deep bipolar transistors
axwell's equations and electromagnetic wave (3-4 tir	nes)			[Cou	rse sch	edule and c	ontents	5]					
mputational electromagnetics (1-2 times)				Model	ling of ac	tive devices (3 times):	-	ara 1	1 in 1	to traci	ting d. 1	on in the start
ademic achievement test (1 time)				circuit	theory.	The concepts a	are the c	ontrolled	source and				es in the electric ling between the bia
ourse requirements]				and the	e signal,	another impor	rtant con	cept, is le	ctured.				
ectromagnetic Theory 1						of transistor ci					1.00		
valuation methods and policy]													erences are lectured ed with somewhat
a term examination (raw score)					cal circui						e		
teferences, etc.] (Reference books)				are lec Operat The co operati differe	tional am ncept an ional am ential circ	we bear in min plifiers (2 tim id advantages plifier, the virt	nd that t nes): of the ne tual shor	hey are ap egative fee t, is expla	plied in op edback circ ined. The l	erational uit are lec inear ope	amplifiers ctured, and rational cir	l an impor rcuits such	C amplifier circuits tant concept in the 1 as integrator and tial amplifiers are
tudy outside of class (preparation and revie Dther information (office hours, etc.)) ease visit KULASIS to find out about office hours.	w)]				ators (2 t		r circuit	is lecture	d as a conc	ept of the			√arious oscillator 電子回路(2) ↓↓↓
子回路(2)					回路(3)								
cuits are introduced with their characteristics.				The ho	omepage	of this course	is locate	ed on Pan	dA (https://	panda.ec	s.kyoto-u.a	ac.jp/porta	l/).
ners (1 time): ve have a more lecture time, nonlinear circuits of m plies for electronic circuits, and the noise in electro			lation circuits, power			tructor after th r is shown in F			e students	have any	questions.		
dback (1 time): make an examination in order to investigate the acl nee for discussion to the students who do not achier		ecture. We will	offer an additional	*Pleas	se visit K	ULASIS to fir	nd out al	oout office	e hours.				
the for discussion to the students who do not achie													
Course requirements] otElectric and Electronic Circuit (60030)quot and qu turer recommends moderate understanding of funda requisites in order to achieve this course.)													

Masao Kitano 『Fundamentals of Electronic Circuits 』 (Reimei Publishing, Kyoto) (ibid:BB04087527)

[References, etc.] (Reference books)

(Reference DOORS) In addition to Japanese books, Tietze and Schenk: Electronic Circuits (Splinger) isbn{} {354050608X} isbn{} {9783540004295}; Hayes and Horowitz: Student Manual for the Art of Electronics (Cambridge) isbn{} {0521377099}

(Related URLs)

(Link to the homepage of this course is here; (https://panda.ecs.kyoto-u.ac.jp/portal/site/2021-110-6010-000) or (https://panda.ecs.kyoto-u.ac.jp/portal/). Sorry for Japanese version only.)

[Study outside of class (preparation and review)]

In case you need.

(Other information (office hours, etc.))

The topics will be selected owing to limit of lecture time.

The students should prepare quotBar Coverquot from the website of the Faculty of Electric and Electronic Engineering (http://www.s-ee.t.kyoto-u.ac.jp/ja/student/index.html)) by themselves, and use it as a title page of each report and the exercise in the lecture.

Course numb	Der U-E	NG26 26	5012 LJ11	U-ENG	26 26012	LJ72			論理回路(2)
Course title and course itle in Lo English)	理回路 gic Circuits			na	istructor's ame, job ti nd departr f affiliatior	itle, Gradi ment Profe		hool of Informatics SHIMOTO MASANORI	[Course requirements] None [Evaluation methods and policy]
arget year	2nd year stude	nts or above	Number	of credits	s 2	Year/seme	esters	2021/First semester	The level of achievement toward the goal of this lecture will be examined by a regular exam.
ays and periods	Fri.1	Class	style	Lecture		Languag	e of instruction	Japanese	[Textbooks]
Overview ar				Looture				oupunese	Naofumi Takagi 『Logic Circuits』 (Ohmsha) ISBN:9784274215995
irst, Boolean a	lgebra, logi ind sequenti	c function	n and its m	inimizatio	n are exp	lained. Then	, analys	uits such as processors. is and design of y numbers are	[References, etc.] (Reference books) Teruhiko Yamada "Theory of Logic Circuits.] (Morikita Publishing) ISBN:4627805306 Keikichi Tamaru "Basics of Logic Circuits.] (Kougaku-Tosho) ISBN:4769202040
rom this lectur ircuits both for						analysis and	1 design	of small-scale logic	[Study outside of class (preparation and review)]
Course sche	edule and	content	sl						Related part in the textbook should be read before lecture. Practices in the textbook should be solved w
			-	g the unde	rstanding	of the stude	nts and	adding explanations	the topic is covered by the lecture.
nd tasks when	necessary, v	ve will sp	bend the nu	imber of w	eeks list	ed in [].			(Other information (office hours, etc.))
re covered. 2) Logic minin Aethods for log roperties of log 3) Combination	and logic cir nization [4 v gic minimiza gic function: nal circuit [2	veeks] tion usin are expl	iber systen g Boolean lained.	cubes and	Karnaug	sh maps, Quin	ne-McC	d logical expressions Cluskey method, al circuits are discussed.	*Please visit KULASIS to find out about office hours.
f sequential cit 5) Arithmetic o	expression o reuits, synch circuit [1 we lay and haz:	f sequent ronous c ek] urd in log	ounters an tic circuits	d registers are explai	are expla ned. Metl	uined.		os, analysis and design tion and subtraction,	
6) Confirmatio he level of une								f necessary. 論理回路(2) ↓ ↓ ↓	

Course number Course title (and course title in English)		6013 LJ72		nam and	ructor's ne, job tit departm ffiliation	nent	Graduate School of Informatics Associate Professor,YAMAMOTO KOU Graduate School of Informatics Associate Professor,MURATA HIDEKAZU			
Target year	2nd year students or above	Number o	of cred	its	2	Year	r/semesters	2021/Second semester		
Days and periods T	ue.1 Class	s style	Lecture	e			Language of instruction	Japanese		
Overview and	purpose of the	course]								
error detection co also touched upo	odes (cyclic codes, n.							so describe concrete rmation security are		
	-							ransmission. They will		
[Course schee	dule and content	ts]								
models, includin, information sour coding methods : Channel coding the Shannon.s chann Error detection c parity check codd BCH code, etc., 1 Information secu important inform information; spec signatures and at Confirmation of learned the conte	g memoryless sourd ce coding theorems re described. heorems (2 classes) el coding theorem odes and error corre e, Hamming code, a re introduced as m rity (2 classes) Opp ation. Explanation cial focus is given t thentication, and o extent of student le nts of this course.	ess and Marl Hu.man and Mutual infe- ection codess and cyclic cc ultiple error oortunities ha is provided - o basic item ther key issu	kov info d Lemp ormatio (5 class ode. Als correct ave incr of the co s conces ies.	orma pel-2 on ar ses) so, b tion rease odir rnin	ation so Ziv codi nd chann Detaile vased on codes. ed for th ng that is g public	urces, ng and nel cap d expl know ne elec s esser c-key o	followed by c d other concre pacity are disc lanation is ma rledge of finite etronic transmi ntial to secure encryption sys	te information source ussed, together with de of the principles of e fields (Galois .eld), ission, via networks, of the safety of that		
[Course requi	rements]		_							
Knowledge of pr	obability (probabili	ity theory fu	ndamen	ntals) and al	gebra	is desirable.			

情報理論(2)

[Evaluation methods and policy] Based on a written examination (max. score =100), although consideration is also given to evaluations on a couple of times of small tests or reports (max. score = 10 for each). The max. of the total score is 100.

[Textbooks] 『情報理論(改訂2版)』ISBN:9784274223259

[References, etc.]

- |References, etc.] (Reference books) 『圧縮処理プログラミング』ISBN:978479735999 『暗号技術入門』ISBN:978400298735 『秋教系入門』ISBN:978400298735 『誤り訂正符号入門』ISBN:9784627817111 『代数系と符号理論入門』ISBN:978463

[Study outside of class (preparation and review)]

Students are requested to possess, and to review, their knowledge of probability (probability theory fundamentals) and algebra.

(Other information (office hours, etc.))

A portion of classes and topics may be either omitted or newly added.

未更新	
Course number U-ENG26 26015 LJ52 U-ENG26 26015 LJ72	Course number U-ENG26 26016 LJ72
Course title Instructor's	Course title Instructor's
and course 物性・デバイス基礎論 name, job title, httle in inglish) and department of affiliation filestory and department of affiliation filestory and department of affiliation filestory and department of affiliation filestory and fil	(and course)計算機工学 name, job title, and department of affiliation Graduate School of Informatics
arget year 2nd year students or above Number of credits 2 Year/semesters 2021/First semester	Target year 2nd year students or above Number of credits 2 Year/semesters 2021/Second semesters
ays and periods Tue.1 Class style Lecture Language distinction Japanese	Days and periods Mon.4 Class style Lecture Language distruction Japanese
Overview and purpose of the course]	[Overview and purpose of the course]
	This course attempts to provide a foundation for students to understand modern computer architecture and apply the insights and principles to understand operation of the computer systems.
Course objectives]	[Course objectives]
	The primary goal is to help students understand how computer systems work. The course places a strong emphasis on the organization and operation of a basic pipelined microprocessor.
Course schedule and contents]	[Course schedule and contents]
Quantum mechnics,4-5times, tatistics,3-4times,	Computer systems overview (2 weeks): Fundamentals of computers history, data representation and arithmetic on computers, instruction sets, and components.
olid state physics,2-3times, Jectrons in solids,3-4times,	Number representation and binary arithmetics (4 weeks): Integers, fixed point float, IEEE 754 floating
ummary,1time,	numbers; binary arithmetic, and logic operations in ALU. Machine language (2 weeks): Instruction formats of RISC processors; basic assembly language
[Course requirements]	ALU and data path (2 weeks): Composition of ALU, highlighting the correspondence with ISA Control path and pipelining (4 weeks): Data flow and control in the computer; pipelining; instruction
lone	execution Course summary (1 week): Summarize overall computer architecture
Evaluation methods and policy]	[Course requirements]
	Logic circuits (60120).
	[Evaluation methods and policy]
[Textbooks] Fanaka Tetsuro: Busseikougaku no kiso (Asakura Shoten) isbn{} {4254210035}	A final course grade is given on the basis of the end-of-term exam. Results of homework assignments give in almost every class may be additionally considered for the grading.
anna result. Dassentougatu no kiso (risukula shotel) ison (j (1254210055)	[Textbooks]
[References, etc.] (Reference books)	Printed handouts are provided. Recommended to have following supplemental textbook.
Study outside of class (preparation and review)]	
(Other information (office hours, etc.))	
*Please visit KULASIS to find out about office hours.	Continue to 計算機工学(2)↓↓
计算機工学(2)	未更新 Course number U-ENG26 36022 LJ72
References, etc.] (Reference books)	Course number U-ENG26 36022 LJ72 Course title (and course title in Instructor's Electric Circuits Instructor's name, job title, and department Graduate School of Engineering Associate Professor, HISAKADO TAK,
[References, etc.]	Course number U-ENG26 36022 LJ72 Course title (and course) Instructor's 電気回路 Instructor's name, job title, Graduate School of Engineering
References, etc.] (Reference books) David Patterson and John Hennessy 『Computer Organization and Design: The Hardware/Software Interface』	Course title (and course 電気回路 name, job title, title in Electric Circuits and department Associate Professor,HISAKADO TAKA
References, etc.] (Reference books) David Patterson and John Hennessy 『Computer Organization and Design: The Hardware/Software Interface』 (Related URLs)	Course number U-ENG26 36022 LJ72 Course title (and course title in English) 面気回路 Electric Circuits Instructor's and department of affiliation Graduate School of Engineering Associate Professor,HISAKADO TAK/
(References, etc.] (Reference books) David Patterson and John Hennessy [Computer Organization and Design: The Hardware/Software Interface,] (Related URLs) (Materials are provided through KULASIS.https://www.k.kyoto-u.ac.jp/student/)	Course number U-ENG26 36022 LJ72 Course title (and course title in English) 世名同路 Electric Circuits Instructor's name, job title, and department of affiliation Graduate School of Engineering Associate Professor,HISAKADO TAKA 2021/First semester Target year Prd year students or above Tue.3 Number of credits 2 Year/semesters 2021/First semester Days and periods [Overview and purpose of the course] Lecture Language distruction Japanese
[References, etc.] (Reference books) David Patterson and John Hennessy [Computer Organization and Design: The Hardware/Software Interface] (Related URLs) [Materials are provided through KULASIS.https://www.k.kyoto-u.ac.jp/student/) [Study outside of class (preparation and review)] (hort quiz will be given as a homework at the end of the classes, which covers some of the key topics	Course number U-ENG26 36022 LJ72 Course title (and course title in English) U-ENG26 36022 LJ72 Target year 副太児回済 Target year Srd year students or above (Number of credits) Days and periods Tue.3 Class style Lecture Locture Japanese [Overview and purpose of the course] The course introduces the fundamentals of transmission line which is essensial for high-frequency circuit design. Topics covered include: circuit model of transmission line; telegraph equation, transient and steady
References, etc.] (Reference books) avid Patterson and John Hennessy "Computer Organization and Design: The Hardware/Software Interface,] (Related URLs) Materials are provided through KULASIS.https://www.k.kyoto-u.ac.jp/student/) Study outside of class (preparation and review)] hort quiz will be given as a homework at the end of the classes, which covers some of the key topics iscussed in the lecture. Students are asked to solve them and submit by the next class. Through solving roblems, students should try to deepen the understanding of the design concepts and the mechanisms of the	Course number U-ENG26 36022 LJ72 Course title (and course title in English) Instructor's Electric Circuits Instructor's name, job title, and department of affiliation Graduate School of Engineering Associate Professor,HISAKADO TAK. Target year Ind year students or above and year students or above Days and periods Vear/semesters 2021/First semester Days and periods Tue.3 Class style Lecture Lecture Leques / Instructor The course introduces the fundamentals of transmission line which is essensial for high-frequency circuit The course introduces the fundamentals of transmission line which is essensial for high-frequency circuit
References, etc.] (Reference books) avid Patterson and John Hennessy "Computer Organization and Design: The Hardware/Software Interface,] (Related URLs) Materials are provided through KULASIS.https://www.k.kyoto-u.ac.jp/student/) Study outside of class (preparation and review)] hort quiz will be given as a homework at the end of the classes, which covers some of the key topics iscussed in the lecture. Students are asked to solve them and submit by the next class. Through solving roblems, students should try to deepen the understanding of the design concepts and the mechanisms of the	Course number U-ENG26 36022 LJ72 Course title (and course title in English) 電気回路 Electric Circuits Instructor's name, job title, and department of affiliation Graduate School of Engineering Associate Professor,HISAKADO TAK Target year Ind year students or above Professor,HISAKADO TAK Instructor's name, job title, and department of affiliation Graduate School of Engineering Associate Professor,HISAKADO TAK Days and periods Tue.3 Class style Lecture Impage distructor Japanese [Overview and purpose of the course] The course introduces the fundamentals of transmission line; telegraph equation, transient and steady states in transmission line, analysis with Laplace transform. [Course objectives]
References, etc.] (Reference books) avid Patterson and John Hennessy "Computer Organization and Design: The Hardware/Software Interface.] (Related URLs) Materials are provided through KULASIS.https://www.k.kyoto-u.ac.jp/student/) Study outside of class (preparation and review)] hort quiz will be given as a homework at the end of the classes, which covers some of the key topics secused in the lecture. Students are asked to solve them and submit by the next class. Through solving roblems, students should try to deepen the understanding of the design concepts and the mechanisms of the imputers. (Other information (office hours, etc.))	Course number U-ENG26 36022 LJ72 Course title (and course title in English) 電気回路 Electric Circuits Instructor's name, job title, and department of affiliation Graduate School of Engineering Associate Professor,HISAKADO TAK Target year Prd year students or above Target year Prd year students or above Tue.3 Number of credits Lecture 2 Year/semesters 2021/First semester Days and periods Tue.3 Class style Lecture Lecture Lapaged instructor Japanese [Overview and purpose of the course] The course introduces the fundamentals of transmission line which is essensial for high-frequency circuit design. Topics covered include: circuit model of transmission line; telegraph equation, transient and stead states in transmission line, analysis with Laplace transform.
References, etc.] (Reference books) David Patterson and John Hennessy "Computer Organization and Design: The Hardware/Software Interface] (Related URLs) Materials are provided through KULASIS.https://www.k.kyoto-u.ac.jp/student/) Study outside of class (preparation and review)] hort quiz will be given as a homework at the end of the classes, which covers some of the key topics iscussed in the lecture. Students are asked to solve them and submit by the next class. Through solving roblems, students should try to deepen the understanding of the design concepts and the mechanisms of the omputers. (Other information (office hours, etc.)) his syllabus is subject to change. Any changes to the syllabus shall be distributed in writing, which may	Course number U-ENG26 36022 LJ72 Course title (and course title in English) U-ENG26 36022 LJ72 Target year 超気回路 Electric Circuits Instructor's name, job title, and department of affiliation Graduate School of Engineering Associate Professor,HISAKADO TAK Target year Brd year students or above Purpose of the course] Instructor's name, job title, and department of affiliation Graduate School of Engineering Associate Professor,HISAKADO TAK Days and periods Tue.3 Class style Lecture Japanese [Overview and purpose of the course] The course introduces the fundamentals of transmission line which is essensial for high-frequency circuit design. Topics covered include: circuit model of transmission line; telegraph equation, transient and steady states in transmission line, analysis with Laplace transform. [Course objectives] Students are expected to learn the transient and steady states of the circuit with transmission line. [Course schedule and contents] Distributed and lumped circuit, Itime, We introduce transmission line.
References, etc.] (Reference books) bavid Patterson and John Hennessy "Computer Organization and Design: The Hardware/Software Interface.] (Related URLs) Materials are provided through KULASIS.https://www.k.kyoto-u.ac.jp/student/) Study outside of class (preparation and review)] hort quiz will be given as a homework at the end of the classes, which covers some of the key topics iscussed in the lecture. Students are asked to solve them and submit by the next class. Through solving roblems, students should try to deepen the understanding of the design concepts and the mechanisms of the omputers. (Other information (office hours, etc.)) This syllabus is subject to change. Any changes to the syllabus shall be distributed in writing, which may nelude electronic communication.	Course number U-ENG26 36022 LJ72 Course title (and course) title in English) U-ENG26 36022 LJ72 Target year Electric Circuits Target year Instructor's Electric Circuits Target year Ind year students or above and year students or above Tue.3 Number of credits 2 Year/semesters 2021/First semester Days and periods Tue.3 Class style Lecture Image distorted Japanese [Overview and purpose of the course] The course introduces the fundamentals of transmission line which is essensial for high-frequency circuit design. Topics covered include: circuit model of transmission line; telegraph equation, transient and stead; states in transmission line, analysis with Laplace transform. [Course objectives] Students are expected to learn the transient and steady states of the circuit with transmission line. [Course schedule and contents] Distributed and lumped circuit, time, We introduce transmission line. Transient analysis, Stimes, We introduce the circuit model of transmission line.
References, etc.] (Reference books) David Patterson and John Hennessy "Computer Organization and Design: The Hardware/Software Interface] (Related URLs) Materials are provided through KULASIS.https://www.k.kyoto-u.ac.jp/student/) Study outside of class (preparation and review)] hort quiz will be given as a homework at the end of the classes, which covers some of the key topics iscussed in the lecture. Students are asked to solve them and submit by the next class. Through solving roblems, students should try to deepen the understanding of the design concepts and the mechanisms of the omputers. (Other information (office hours, etc.)) This syllabus is subject to change. Any changes to the syllabus shall be distributed in writing, which may tolude electronic communication. Please visit KULASIS to find out about office hours.	Course number U-ENG26 36022 LJ72 Course title (and course) English) U-ENG26 36022 LJ72 Target year Electric Circuits Target year ind year students or above and year students or above ittle in English) Instructor's name, job title, and department of affiliation Graduate School of Engineering Associate Professor,HISAKADO TAK. Target year ind year students or above Purpose of the course] Vear/semesters 2021/First semester Days and periods Tue.3 Class style Lecture Impuge distruction Japanese [Overview and purpose of the course] The course introduces the fundamentals of transmission line; telegraph equation, transient and steady states in transmission line, analysis with Laplace transform. Impuge distruction Japanese [Course objectives] Students are expected to learn the transient and steady states of the circuit with transmission line. [Course schedule and contents] Distributed and lumped circuit, time, We introduce transmission line. Transient analysis, Stimes, We introduce to circuit model of transmission line. Transient analysis of the analysis in transmission line. Transient analysis of the analysis in transmission line.
References, etc.] (Reference books) bavid Patterson and John Hennessy "Computer Organization and Design: The Hardware/Software Interface] (Related URLs) Materials are provided through KULASIS.https://www.k.kyoto-u.ac.jp/student/) Study outside of class (preparation and review)] hort quiz will be given as a homework at the end of the classes, which covers some of the key topics iscussed in the lecture. Students are asked to solve them and submit by the next class. Through solving roblems, students should try to deepen the understanding of the design concepts and the mechanisms of the omputers. (Other information (office hours, etc.)) his syllabus is subject to change. Any changes to the syllabus shall be distributed in writing, which may uclude electronic communication. Please visit KULASIS to find out about office hours. Courses delivered by instructors with practical work experience] 1) Category	Course number U-ENG26 36022 LJ72 Course title (and course title in English) Instructor's Electric Circuits Instructor's name, job title, and department of affiliation Graduate School of Engineering Associate Professor,HISAKADO TAKA Associate Professor,HISAKADO TAKA Days and periods Target year Ind year students or above Target year Number of credits 2 Year/semesters 2021/First semester Days and periods Tue.3 Class style Lecture Lappaped instructor (Joverview and purpose of the course) The course introduces the fundamentals of transmission line which is essensial for high-frequency circuit design. Topics covered include: circuit model of transmission line; telegraph equation, transient and steady states in transmission line, analysis with Laplace transform. [Course objectives] Students are expected to learn the transient and steady states of the circuit with transmission line. [Course schedule and contents] Distributed and lumped circuit, Itime, We introduce transmission line. Transient analysis, Stimes, We introduce the circuit model of transmission line and derive telegraph equation Transient analysis, in transmission line is explained.
References, etc.] (Reference books) avid Patterson and John Hennessy 『Computer Organization and Design: The Hardware/Software Interface.] (Related URLs) Materials are provided through KULASIS.https://www.k.kyoto-u.ac.jp/student/) Study outside of class (preparation and review)] hort quiz will be given as a homework at the end of the classes, which covers some of the key topics iscussed in the lecture. Students are asked to solve them and submit by the next class. Through solving roblems, students should try to deepen the understanding of the design concepts and the mechanisms of the omputers. (Other information (office hours, etc.)) his syllabus is subject to change. Any changes to the syllabus shall be distributed in writing, which may teclude electronic communication. Please visit KULASIS to find out about office hours. Courses delivered by instructors with practical work experience] 1) Category course with practical content delivered by instructors with practical work experience	Course number U-ENG26 36022 LJ72 Course title (and course English) 電気回路 Electric Circuits Instructor's name, job title, and department of affiliation Graduate School of Engineering Associate Professor,HISAKADO TAK. Target year Prd year students or above Professor, PLSAKADO TAK. Graduate School of Engineering Associate Professor,HISAKADO TAK. Days and periods Tue.3 Class style Lecture Lecture Lapage dilethoute Days and periods Tue.3 Class style Lecture Lecture Lapage dilethoute The course introduces the fundamentals of transmission line which is essensial for high-frequency circuit design. Topics covered include: circuit model of transmission line; telegraph equation, transient and steady states in transmission line, analysis with Laplace transform. [Course objectives] Students are expected to learn the transient and steady states of the circuit with transmission line. [Course schedule and contents] Distributed and lumped circuit, 1time, We introduce transmission line. Transient analysis, 5times, Kee introduce the circuit model of transmission line. Transient analysis of lumped circuit, 3times, Transient analysis with Laplace transform synthesis of circuit, 2times, Synthesis of circuit by network functions. academic achievement test, I time, The level of understanding on this lecture will be confirmed.
References, etc.] (Reference books) avid Patterson and John Hennessy 『Computer Organization and Design: The Hardware/Software Interface.] (Related URLs) Materials are provided through KULASIS.https://www.k.kyoto-u.ac.jp/student/) Study outside of class (preparation and review)] hort quiz will be given as a homework at the end of the classes, which covers some of the key topics iscussed in the lecture. Students are asked to solve them and submit by the next class. Through solving roblems, students should try to deepen the understanding of the design concepts and the mechanisms of the omputers. (Other information (office hours, etc.)) his syllabus is subject to change. Any changes to the syllabus shall be distributed in writing, which may neulude electronic communication. Please visit KULASIS to find out about office hours. Courses delivered by instructors with practical work experience] 1) Category course with practical content delivered by instructors with practical work experience	Course number U-ENG26 36022 LJ72 Course title (and course title in English) Instructor's and department of affiliation Graduate School of Engineering Associate Professor,HISAKADO TAKA and department of affiliation Target year Pid year students or above Tue.3 Number of credits 2 Year/semesters 2021/First semester Days and periods Tue.3 Class style Lecture Langage distinctor Japanese [Course introduces the fundamentals of transmission line which is essensial for high-frequency circuit design. Topics covered include: circuit model of transmission line; telegraph equation, transient and steady states in transmission line, analysis with Laplace transform. [Course objectives] Students are expected to learn the transient and steady states of the circuit with transmission line. [Course schedule and contents] Distributed and lumped circuit, ltime, We introduce transmission line. Distributed and lumped arcuit, ltime, Ke introduce transmission line. Ac analysis, 3times, Steady state analysis in transmission line. Transient analysis of lumped circuit, limes, Tansient analysis of lumped circuit, stimes, of circuit by network functions.
References, etc.] (Reference books) avid Patterson and John Hennessy "Computer Organization and Design: The Hardware/Software Interface.] (Related URLs) (Related URLs) Materials are provided through KULASIS.https://www.k.kyoto-u.ac.jp/student/) (Related URLs) Study outside of class (preparation and review)] (Preparation and review)] hort quiz will be given as a homework at the end of the classes, which covers some of the key topics iscussed in the lecture. Students are asked to solve them and submit by the next class. Through solving roblems, students should try to deepen the understanding of the design concepts and the mechanisms of the omputers. (Other information (office hours, etc.)) (Design is subject to change. Any changes to the syllabus shall be distributed in writing, which may relude electronic communication. Please visit KULASIS to find out about office hours. (Courses delivered by instructors with practical work experience] () Category	Course number U-ENG26 36022 LJ72 Course title (and course title in English) Instructor's name, job title, and department of affiliation Graduate School of Engineering Associate Professor,HISAKADO TAKJ Target year Fid year students or abov Number of credits 2 Year/semesters 2021/First semester Days and periods Tue.3 Class style Lecture Imput/infinition Japanese [Overview and purpose of the course] The course introduces the fundamentals of transmission line which is essensial for high-frequency circuit design. Topics covered include: circuit model of transmission line; telegraph equation, transient and steady states in transmission line, analysis with Laplace transform. [Course objectives] Students are expected to learn the transient and steady states of the circuit with transmission line. Transient analysis, 5times, We introduce the circuit model of transmission line. In analysis, 5times, We introduce transmission line. Transient analysis, of lumped circuit, 1time, We introduce transmission line. Transient analysis, 5times, Steady state analysis in transmission line. Transient analysis of lumped circuit, 3times, Transient analysis with Laplace transform synthesis of circuit, 2times, Synthesis of circuit by network functions. academic achievement test, 1time, The level of understanding on this lecture will be confirmed. [Course requirements] Image analysis of lumped circu
References, etc.] (Reference books) bavid Patterson and John Hennessy "Computer Organization and Design: The Hardware/Software Interface.] (Related URLs) Materials are provided through KULASIS.https://www.k.kyoto-u.ac.jp/student/) Study outside of class (preparation and review)] hort quiz will be given as a homework at the end of the classes, which covers some of the key topics iscussed in the lecture. Students are asked to solve them and submit by the next class. Through solving roblems, students should try to deepen the understanding of the design concepts and the mechanisms of the omputers. (Other information (office hours, etc.)) his syllabus is subject to change. Any changes to the syllabus shall be distributed in writing, which may nelude electronic communication. Please visit KULASIS to find out about office hours. Courses delivered by instructors with practical work experience] 1) Category course with practical content delivered by instructors with practical work experience 2) Details of instructors' practical work experience related to the course	Course number U-ENG26 36022 LJ72 Course title (and course title in English) Instructor's name, job title, and department of affiliation Graduate School of Engineering Associate Professor,HISAKADO TAKA and department of affiliation Target year Fid year students or above Tue.3 Number of credits 2 Year/semesters 2021/First semester Days and periods Tue.3 Class style Lecture Laquage distinctor Japanese [Course introduces the fundamentals of transmission line which is essensial for high-frequency circuit design. Topics covered include: circuit model of transmission line; telegraph equation, transient and steady states in transmission line, analysis with Laplace transform. [Course objectives] Students are expected to learn the transient and steady states of the circuit with transmission line. [Course schedule and contents] Distributed and lumped circuit, lime, We introduce transmission line. Distributed and sysis in transmission line is explained. AC analysis, Stimes, Steady state analysis in transmission line. Transient analysis of lumped circuit, lime, The level of understanding on this lecture will be confirmed. [Course requirements] None
References, etc.] (Reference books) David Patterson and John Hennessy "Computer Organization and Design: The Hardware/Software Interface.] (Related URLs) Materials are provided through KULASIS.https://www.k.kyoto-u.ac.jp/student/) Study outside of class (preparation and review)] hort quiz will be given as a homework at the end of the classes, which covers some of the key topics iscussed in the lecture. Students are asked to solve them and submit by the next class. Through solving roblems, students should try to deepen the understanding of the design concepts and the mechanisms of the omputers. (Other information (office hours, etc.)) This syllabus is subject to change. Any changes to the syllabus shall be distributed in writing, which may nelude electronic communication. Please visit KULASIS to find out about office hours. Courses delivered by instructors with practical work experience] 1) Category course with practical content delivered by instructors with practical work experience 2) Details of instructors' practical work experience related to the course	Course number U-ENG26 36022 LJ72 Course title (and course title in English) Instructor's name, Job title, and department of affiliation Graduate School of Engineering Associate Professor,HISAKADO TAKJ Target year Ind year students or above Number of credits 2 Year/semesters 2021/First semester Days and periods Tue.3 Class style Lecture Impaged instructor Japanese [Overview and purpose of the course] The course introduces the fundamentals of transmission line which is essensial for high-frequency circuit design. Topics covered include: circuit model of transmission line; telegraph equation, transient and steady states in transmission line, analysis with Laplace transform. [Course objectives] Students are expected to learn the transient and steady states of the circuit with transmission line. Transient analysis, 5times, We introduce the circuit model of transmission line. Transient analysis, 5times, We introduce the circuit model of transmission line. Transient analysis of lumped circuit, Jtime, We introduce transmission line. Transient analysis, 5times, Steady state analysis in transmission line. Transient analysis of fumped circuit, Jtimes, Transient analysis with Laplace transform synthesis of circuit, 2times, Synthesis of circuit by network functions. academic achievement test, Itime, The level of understanding on this lecture will be confirmed. [Course requirements] None
References, etc.] (Reference books) David Patterson and John Hennessy "Computer Organization and Design: The Hardware/Software Interface.] (Related URLs) Materials are provided through KULASIS.https://www.k.kyoto-u.ac.jp/student/) Study outside of class (preparation and review)] hort quiz will be given as a homework at the end of the classes, which covers some of the key topics iscussed in the lecture. Students are asked to solve them and submit by the next class. Through solving roblems, students should try to deepen the understanding of the design concepts and the mechanisms of the omputers. (Other information (office hours, etc.)) This syllabus is subject to change. Any changes to the syllabus shall be distributed in writing, which may nelude electronic communication. Please visit KULASIS to find out about office hours. Courses delivered by instructors with practical work experience] 1) Category course with practical content delivered by instructors with practical work experience 2) Details of instructors' practical work experience related to the course	Course number U-ENG26 36022 LJ72 Course title (and course) English) U-ENG26 36022 LJ72 Target year Electric Circuits Target year ind year students or above and year students or above provides Instructor's name, job title, and department of affiliation Graduate School of Engineering Associate Professor,HISAKADO TAK Days and periods Tue.3 Class style Lecture Impuge distuded Japanese [Overview and purpose of the course] The course introduces the fundamentals of transmission line which is essensial for high-frequency circuit design. Topics covered include: circuit model of transmission line; telegraph equation, transient and steady states in transmission line, analysis with Laplace transform. [Course objectives] Students are expected to learn the transient and steady states of the circuit with transmission line. Transient analysis, Stimes, We introduce the circuit model of transmission line. Transient analysis, Stimes, Steady state analysis in transmission line. Transient analysis of circuit, Jtime, Transient analysis of lumped circuit, Jtime, Transient analysis of lumped circuit, Jtime, Transient analysis of circuit, Jtime, Transient analysis of lumped circuit, Jtime, Transient analysis of circuit, Jtime, Transient analysis of lumed circuit, Jtime, Transient
References, etc.] (Reference books) bavid Patterson and John Hennessy "Computer Organization and Design: The Hardware/Software Interface.] (Related URLs) Materials are provided through KULASIS.https://www.k.kyoto-u.ac.jp/student/) Study outside of class (preparation and review)] hort quiz will be given as a homework at the end of the classes, which covers some of the key topics iscussed in the lecture. Students are asked to solve them and submit by the next class. Through solving roblems, students should try to deepen the understanding of the design concepts and the mechanisms of the omputers. (Other information (office hours, etc.)) his syllabus is subject to change. Any changes to the syllabus shall be distributed in writing, which may nelude electronic communication. Please visit KULASIS to find out about office hours. Courses delivered by instructors with practical work experience] 1) Category course with practical content delivered by instructors with practical work experience 2) Details of instructors' practical work experience related to the course	Course number U-ENG26 36022 LJ72 Course title (and course) English) Instructor's Electric Circuits Instructor's name, job title, and department of affiliation Graduate School of Engineering Associate Professor,HISAKADO TAK Target year ird year students or above Pays and periods Tue.3 Class style Lecture Impage districts Japanese Days and periods Tue.3 Class style Lecture Impage districts Japanese [Overview and purpose of the course] The course introduces the fundamentals of transmission line which is essensial for high-frequency circuit design. Topics covered include: circuit model of transmission line; telegraph equation, transient and steady states in transmission line, analysis with Laplace transform. [Course objectives] Students are expected to learn the transient and steady states of the circuit with transmission line. [Course schedule and contents] Distributed and lumped circuit, time, We introduce the circuit model of transmission line. Transient analysis, Stimes, We introduce the circuit model of transmission line. AC analysis, Stimes, We introduce the circuit model of transmission line. Transient analysis of lumped circuit, Time, Transient analysis of lumed circuit, Tamiseint analysis with Laplace transform synthesis of circuit, 2times, Synthesis of circuit ty network functions. academic achievement test, I time, The level of understanding on this lecture will be confirmed.
References, etc.] (Reference books) David Patterson and John Hennessy "Computer Organization and Design: The Hardware/Software Interface.] (Related URLs) Materials are provided through KULASIS.https://www.k.kyoto-u.ac.jp/student/) Study outside of class (preparation and review)] hort quiz will be given as a homework at the end of the classes, which covers some of the key topics iscussed in the lecture. Students are asked to solve them and submit by the next class. Through solving roblems, students should try to deepen the understanding of the design concepts and the mechanisms of the omputers. (Other information (office hours, etc.)) This syllabus is subject to change. Any changes to the syllabus shall be distributed in writing, which may nelude electronic communication. Please visit KULASIS to find out about office hours. Courses delivered by instructors with practical work experience] 1) Category course with practical content delivered by instructors with practical work experience 2) Details of instructors' practical work experience related to the course	Course number U-ENG26 36022 LJ72 Course title (and course English) Instructor's Electric Circuits Instructor's name, job title, and department of affiliation Graduate School of Engineering Associate Professor,HISAKADO TAKJ Target year Prd year students or above Tue.3 Number of credits 2 Year/semesters 2021/First semester Days and periods Tue.3 Class style Lecture Impage/Instruct Japanese [Overview and purpose of the course] The course introduces the fundamentals of transmission line which is essensial for high-frequency circuit design. Topics covered include: circuit model of transmission line; telegraph equation, transient and steady states in transmission line, analysis with Laplace transform. [Course objectives] Students are expected to learn the transient and steady states of the circuit with transmission line. Transient analysis, Stimes, We introduce the circuit model of transmission line. Instructor telegraph equation Transient analysis, Stimes, Steady state analysis in transmissionline. Transient analysis, Stimes, Steady state analysis in transmission line. Iransient analysis, Stimes, State analysis in circuit, Stimes, Transient analysis with Laplace transform synthesis of lumped circuit, Time, The level of understanding on this lecture will be confirmed. [Course requirements] None [Evaluation methods and policy] Reports and exam
References, etc.] (Reference books) bavid Patterson and John Hennessy "Computer Organization and Design: The Hardware/Software Interface.] (Related URLs) Materials are provided through KULASIS.https://www.k.kyoto-u.ac.jp/student/) Study outside of class (preparation and review)] hort quiz will be given as a homework at the end of the classes, which covers some of the key topics iscussed in the lecture. Students are asked to solve them and submit by the next class. Through solving roblems, students should try to deepen the understanding of the design concepts and the mechanisms of the omputers. (Other information (office hours, etc.)) his syllabus is subject to change. Any changes to the syllabus shall be distributed in writing, which may nelude electronic communication. Please visit KULASIS to find out about office hours. Courses delivered by instructors with practical work experience] 1) Category course with practical content delivered by instructors with practical work experience 2) Details of instructors' practical work experience related to the course	Course number U-ENG26 36022 LJ72 Course title (and course) English) Instructor's Electric Circuits Instructor's name, job title, and department of affiliation Graduate School of Engineering Associate Professor,HISAKADO TAK Target year ird year students or above Pays and periods Tue.3 Class style Lecture Impage districts Japanese Days and periods Tue.3 Class style Lecture Impage districts Japanese [Overview and purpose of the course] The course introduces the fundamentals of transmission line which is essensial for high-frequency circuit design. Topics covered include: circuit model of transmission line; telegraph equation, transient and steady states in transmission line, analysis with Laplace transform. [Course objectives] Students are expected to learn the transient and steady states of the circuit with transmission line. [Course schedule and contents] Distributed and lumped circuit, time, We introduce the circuit model of transmission line. Transient analysis, Stimes, We introduce the circuit model of transmission line. AC analysis, Stimes, We introduce the circuit model of transmission line. Transient analysis of lumped circuit, Time, Transient analysis of lumed circuit, Tamiseint analysis with Laplace transform synthesis of circuit, 2times, Synthesis of circuit ty network functions. academic achievement test, I time, The level of understanding on this lecture will be confirmed.
References, etc.] (Reference books) David Patterson and John Hennessy "Computer Organization and Design: The Hardware/Software Interface.] (Related URLs) Materials are provided through KULASIS.https://www.k.kyoto-u.ac.jp/student/) Study outside of class (preparation and review)] hort quiz will be given as a homework at the end of the classes, which covers some of the key topics iscussed in the lecture. Students are asked to solve them and submit by the next class. Through solving roblems, students should try to deepen the understanding of the design concepts and the mechanisms of the omputers. (Other information (office hours, etc.)) This syllabus is subject to change. Any changes to the syllabus shall be distributed in writing, which may nelude electronic communication. Please visit KULASIS to find out about office hours. Courses delivered by instructors with practical work experience] 1) Category course with practical content delivered by instructors with practical work experience 2) Details of instructors' practical work experience related to the course	Course number U-ENG26 36022 LJ72 Course title (and course English) Instructor's Electric Circuits Instructor's name, job title, and department of affiliation Graduate School of Engineering Associate Professor,HISAKADO TAK Target year Prd year students or abov Number of credits 2 Year/semesters 2021/First semester Days and periods Tue.3 Class style Lecture Japanese [Overview and purpose of the course] The course introduces the fundamentals of transmission line which is essensial for high-frequency circuit design. Topics covered include: circuit model of transmission line; telegraph equation, transient and steady states in transmission line, analysis with Laplace transform. [Course objectives] Students are expected to learn the transient and steady states of the circuit with transmission line. Transient analysis, 5times, We introduce the circuit model of transmission line. Instructed and derive telegraph equation Transient analysis, 5times, Steady state analysis in transmissionline. Transient analysis, 5times, Steady state analysis in transmission line. Itransient analysis of lumped circuit, 3times, Transient analysis with Laplace transform synthesis of circuit, 2times, Synthesis of circuit by network functions. academic achievement test, 1time, The level of understanding on this lecture will be confirmed. [Course requirements] None Instructed during class Instructed during
[References, etc.] (Reference books) David Patterson and John Hennessy [Computer Organization and Design: The Hardware/Software Interface] (Related URLs)	Course title (and course title in a course title English) U-ENG26 36022 LJ72 Course title (and course title English) Instructor's name, job title, and department of affiliation Graduate School of Engineering Associate Professor,HISAKADO TAK/ associate Professor,HISAKADO TAK/ of affiliation Target year 3rd year students or above Number of credits 2 Year/semesters 2021/First semester Days and periods Tue.3 Class style Lecture aquaptitatude Japanese [Overview and purpose of the course] The course introduces the fundamentals of transmission line which is essensial for high-frequency circuit design. Topics covered include: circuit model of transmission line; telegraph equation, transient and steady states in transmission line, analysis with Laplace transform. [Course objectives] Students are expected to learn the transient and steady states of the circuit with transmission line. Transient analysis, times, We introduce the circuit model of transmission line and derive telegraph equation Transient analysis, times, We introduce the circuit model of transmission line and derive telegraph equation Transient analysis of lumped circuit, time, The international systis with Laplace transform synthesis of circuit, Zitmes, Synthesis of circuit by network functions. academic achievement test, Itime, The level of understanding on this lecture will be confirmed. [Course requirements] None [Fevaluation methods and policy] Reports and examination

									未更新	,	白毛出你了些心
Course nu	mber	U-ENC	326 36	5026 LJ72							自動制御工学(2)
Course title and course	自動制征	町学				Instruc	tor's ob title,		hool of Engineering GIWARA TOMOMICH		[Course requirements]
		Engineeri	ng				partment	Graduate Sc	hool of Engineering urer,HOSOE YOUHEI		Theory of functions in complex variables, as well as basic understanding about complex numbers.
5 7 /	_										[Evaluation methods and policy]
rget year	Brd y	ar students o	r above	Number	of credi	its 2	Yea	r/semesters	2021/First semester		The assignments are only for motivating review; the grading will be based on the exam.
ys and perio	ds Tue.1		Class	s style	Lecture			Language of instruction	Japanese		[Textbooks] 荒木光彦 『古典制御理論[基礎編]』(培風館)ISBN:4563069019
Overview	and pu	rpose of	fthe	course]							元不分L/多 『日英时间中生曲』 2012年6月/15日14-505005019
omain. The ansformatio	fundam on, trans	entals of c er functio	control ons, bl	l systems a lock diagra	are lectur ams, trans	ed on t sient re	hrough su sponses, f	ch concepts as requency resp	onses, and stability		[References, etc.]
hapter 5 of asic concep	the textl ts, and tl	ook. The	stress elatior	s of the lec ns. Hence	ture, how some top	/ever, i ics are	s placed o left to the	n the theoretic	e former half of cal framework, the studies of the class		(Reference books)
· ·											(Related URLs)
Course ol		-									((from within the university) http://www-lab22.kuee.kyoto-u.ac.jp/~hagiwara/ku/AC/)
o understan aplace trans	d the ba	sic treatm	ent of role, t	Inear fee	dback sys nt respon	stems i ses, sta	n the frequ ability and	ency domain performance	, particularly the evaluation of feedback		[Study outside of class (preparation and review)]
stems, freq							,	1			Reviewing the topics in the preceding part of the lecture is always important before attending the class
Course so	hedule	and cor	ntent	s]							Receive exercise problems by attending the class upon the beginning of the class, and submit the answ reports to receive marking and comments by TA.
eedback sys	stems an	d the Lap	lace tr	ansformat	ion (45	weeks)				
undamental	notions	for feedb	ack sy	stems; his	story and	roles o	of control t	echnologies; t	the Laplace		(Other information (office hours, etc.)) The contents of the lecture and their order are subject to changes depending on the situation each year.
								nd transfer fu			
ock diagra	ms and i	eedback o	contro	l systems ((34 wee	eks)					*Please visit KULASIS to find out about office hours.
	asic pro	perties of							ntrol systems and its ugh the analysis of step		
ransient res	ponses a	nd stabili	ty of s	systems (1-	2 weeks	s)					
ransient res	ponses o	f systems	and a	algebraic s	tability c	riteria o	of feedbac	k systems.			
requency re	sponses	(45 wee	eks)								
	ns; the N	yquist sta	ability	criterion,	and stabi	ility ma	argins. Ch	ecking degree	grams; manipulations of s of understanding of		
								Continue to			
										'	

										未更新		
Course nu	mber	U-ENO	G26 3	6027 LJ72								
		ジタル制御 al Control				nar anc	tructor's ne, job ti d departn affiliation	tle, nent	Graduate School of Engineering Professor,HAGIWARA TOMOMICH Graduate School of Engineering Senior Lecturer,HOSOE YOUHEI			
Target year	. _{3r}	d year students o	or above	Number	of cred	lits	2	Year	r/semesters	2021/Second semester		
Days and perio				s style	Lectur	e			Language of instruction	Japanese		
Engineering' domain is fir well as their systems, sam supposed to	'. The st intr progra pling unders	treatment of oduced thro ams and free period select stand the fur	f disci ugh th quency ction a ndame	rete-time si ne z-transfo y responses and anti-alia ental treatm	gnals ar rmation s, the sta asing fil ent of d	d li and bilit ters igita	near dis l pulse t ty and st are ther al contro	crete-t ransfer teady-s lectur ol syste	ime systems i r functions. D state errors of red on. The cl ems through s	g on "Control n the frequency igital compensators as closed-loop feedback ass members are uch concepts, who are understanding.		
[Course of	ojecti	ives]										
difficulties at the similarit [Course so Fundamental The fundamental The fundamental Pulse transfe Basic compo	nd me y to an chedu s of d ental s ng wi r func nents	easures, parti nd difference ligital contro tructure of c th digital co such as hold such as hold	icularl es fron ntent ol and ligital ntrol s ency r d circu	y the z-train m the analy s] the z-transt control sys systems; th esponse, an tits and pul	nsforma vsis of co formatic stems an e freque nd digita se trans	tion ontii on (4 ad th ncy- il co	and its nuous-ti 45 wee e associ -domair ompensa function	role, th me con iks) iated is i interp tors (4 s; disc	ssues; the z-tr pretation of sa 5 weeks) retization of c	ts and the associated on of controlled objects, as well as aliasing. ansformation as a key implers and aliasing.		
stability and	frequ	ency respons	ses; ar	nd basic dig	gital con			isient i	esponses of e	iiserete-time systems,		
object and di standpoint fo	ligital sturba or the cing d	control syst ances; the sta disturbance	tems v ability rejecti	vith pulse t , stability c ion in digit	ransfer t criteria a al contro	ind s ol sy	steady-s /stems, s	tate en sampli	rors of closed ng period sele	tion of the controlled -loop systems; basic ection and anti-aliasing tents on the exam,		
[Course re	quire	ements]										
Control Engi understandin				omputer Pro	ogramm	ing	in Elect			Engineering (basic ディジタル制御 (2) ↓↓↓		

ディジタル制御(2)

[Evaluation methods and policy]

The assignments are only for motivating review; the grading will be based on the exam.

[Textbooks] 荒木光彦 『ディジタル制御理論入門』(朝倉書店)ISBN:4254209649

[References, etc.]

(Reference books)

(Related URLs)

((from within the university) http://www-lab22.kuee.kyoto-u.ac.jp/~hagiwara/ku/DC/)

[Study outside of class (preparation and review)]

Reviewing the topics in the preceding part of the lecture is always important before attending the class. Receive exercise problems by attending the class upon the beginning of the class, and submit the answer reports to receive marking and comments by TA.

(Other information (office hours, etc.))

The contents of the lecture and their order are subject to changes depending on the situation each year.

									4	を更新			
Course num	oer	U-EN	G26 3	6032 LJ72					1		通信	言基礎論(2)	
		:礎論 iion Theory i	in Elec	trical Comm	unication	Instructo name, jo and dep of affilia	b title, artment	Professor,HA Graduate Scl	1001 of Informa ARADA HIRO 1001 of Informa ssor,MURATA H	SHI atics	Stuc	burse requirements are required to the second secon	-
Target year	Brd	year students o	or above	Number	of cred	lits 2	Yea	ar/semesters	2021/First ser	mester	-	valuation metho	
Days and periods	Wee		Clas	s style	Lectur	р.		Language of instruction	Japanese			luation is made of	extent
Overview a					Lectur	<u> </u>		Langasge of manacaon	Japanese		-	xtbooks]	
This course dis pulse modulation processing basi	cuss	es all types as well as t	of m the pr	odulation r	modulat	ion/dem	odulation	n. Further focu				拿他 『通信方式』	(才・
[Course obje	- 4*-										-	eferences, etc.] Reference book	
Students will ge wireless local a signal expression communication	ain a rea 1 on ar	n understa networks (I nd signal pi	LAN)	, optical fib sing (modu	er comn lation/de	nunicatio modulat	ons, etc. ion) wit	Specifically, st hin time axis a	udents will ma	ster	寺田 [Stuc	1他: 情報通信工 udy outside of d lents are required	学(オー class (
[Course sch	edu	le and co	nten	ts]							Circ	cuits.	
"Signal process Clarification is namely, Fourie especially of th random signals Analog modula Discussion is n modulation me signal-to-noise Digital modula After descriptic digital modula Confirmation is improve levels Confirmation o Confirmation is p	mad r ser tion ade thod ratio ion t ion t ion t f ext ; mad	e of the co ies and Fot sics of ranc and democ of the prin s, with con , etc. and demod 'various m ypes, inclu de of the e: nderstandir ent of stud de of the e:	dulation dulation ciples aparis lulation ethod dding xtent ng.	ransforms a ignals and t on methods s of amplitu son of their on methods is of pulse r modulation of student t carning (1 c that student	and their theories (5-6 cla de mode respecti (4-5 cla nodulati phase s understan lass) s have b	regardin regardin usses) ulation a ve chara sses) on, there hift keyi nding, w earned th	al applica g the sta nd angle cteristics is discu ng (PSK ith suppl ne conter	ntions. Discuss ndardization and modulation ar , including occ ssion of princi), etc., plus the lementary discu- nts of this cour-	on is next mad d quantization d their generat upied bandwic bles and metho basics of sign isssion to further	de n of tion and dth and ods of al space.	Afte	tther informatio er classes, from 10 ease visit KULASI	:30-12:
								Continue to	通信基礎論(2	2)↓↓↓			

d policy] of student's understanding of course contents via written examination. -ム社) ISBN:9784274214738 - ム社) isbn {} {4274129322} (preparation and review)] taken the course Industrial Mathematics (Fourier Analysis) and Electronic ce hours, etc.)) nd out about office hours.

taken the course Industrial Mathematics (Fourier Analysis) and Electronic

情報伝送工学(2)

Confirmation (i.e., evaluation) is made of the extent that students understand the concepts involved in highly reliable information transmissions.

[Course requirements]

tudents are recommended to have taken "Modulation Theory in Electrical Communication"

[Evaluation methods and policy] [Evaluation method]

Written examination (up to 100 points), reports or exercises (total of 1 or 2 times, maximum of 5 points each) are carried out, and the total points (up to 100 points) are evaluated.

[Evaluation criteria]

Evaluation is based on the achievement level of the target.

[Textbooks]

守倉正博『OHM大学テキスト 通信方式』(オーム社)ISBN:9784274214738

[References, etc.] (Reference books)

鈴木博『ディジタル通信の基礎』(数理工学社)ISBN:9784901683845

[Study outside of class (preparation and review)]

Portions of this course involve explanations of applications of "Modulation Theory in Electrical Communication". Students must review these by discovering for themselves the relationships between those applications and "Modulation Theory in Electrical Communication".

(Other information (office hours, etc.))

Portions of course contents may be omitted, or additions may be made when necessary

Please visit KULASIS to find out about office hours.

Course titl nstructor's Graduate School of Informatics name, job title, and department of affiliation 情報伝送工学 (and course Associate Professor.MURATA HIDEKAZU title in Information Transmission Graduate School of Informatics Associate Professor, YAMAMOTO KOUJ English) Year/semesters 2021/Second semester Brd year students or above Number of credits 2 Target year Days and periods Wed.2 Class style Lecture anguage of instructio Japanese [Overview and purpose of the course] We will introduce mobile cellular systems, wireless LANs, Ethernet, optical disks, etc. as specific applications of information transmission. We also discuss issues in the design of each system and their olutions. [Course objectives] Students will gain an understanding of fundamental concepts involving highly reliable information ansmissions via communication channels with noise and interference [Course schedule and contents] Communication systems (3 weeks) (r) communication systems (c) rectary Lectures discuss general configurations for communication systems and wireless communication systems, as well as link budget and channel capacity. (2) Optical disks and Ethernets (2 weeks) Discussions are made of pulse-code modulation (PCM) and baseband transmission required for understanding optical disks and Ethernets. (3) Multiple access for wireless systems (2 weeks) Discussions are made of multiplexing, multiple access, channel allocation, and user scheduling, which are necessary for mobile cellular systems and wireless LANs. (4) Cellular systems (1 week) We describe the cellular system that realizes wide area public wireless service and introduce the concept of clusters and handovers. (5) Fading, and countermeasure techniques (2 weeks) We introduce a typical model of fading in urban areas and countermeasure techniques, including diversity, (6) High-speed and high-efficiency technologies (2 weeks) We introduce orthogonal frequency division multiplexing (OFDM) as high-speed transmission technologies. (7) Spectral efficient technologies (2 weeks) We introduce multiple-input and multiple-output (MIMO) transmission as spectral efficient technologies. (8) Confirmation of extent of student learning (1 week) Continue to 情報伝送工学(2)↓↓↓

Course number U-ENG26 36033 LJ72

							1		
Course number	U-EN	G26 36034 LJ7	2				未更新	1	通信ネットワーク(2)
Course title (and course 通信ネ				Instructor's name, job t and depart	itle,	Graduate Scl Professor,Ok Part-time Le	,		[Course requireme Having previously stud
English)				of affiliation	ı	Part-time Le	cturer,IKEDA SHINPEI		[Evaluation method
		_				Part-time Lectu	rer,MATSUMOTO TAKURO		Students will be compr technology based on re
Target year Brd y	ear students o	or above Numbe	r of cred	lits 2	Year	/semesters	2021/Second semester		Specifically, regular ex
Days and periods Mon	.2	Class style	Lectur	e		Language of instruction	Japanese		added for each report a
[Overview and pu	urpose o	of the course						1	[Textbooks]
Lectures describing switching, transmiss variety of communic	ion contro	ol, network con	trol, and c	ommunicat	ion pro	otocols, as we	ll as examples of a		Other, handouts will be
FTTH.									[References, etc.]
[Course objective Cultivate an understa	-	the basics of co	ommunica	tion netwo	k techi	nologies to ap	ply to current trends.		(Reference books) Other,田坂修二「情報 }{9784864810081} 池田、山本「情報ネ
[Course schedul	e and co	ontents]						1	他田、田平「雨報本
Foundations of the e These sessions will f						theory of tra	ffic analysis.		[Study outside of c It is desirable that stude
Wide area network to These sessions will f component and vario network.	ocus on d	liscussion of the	e structure	of commu					(Other information The order of lectures in *Please visit KULASIS
Internet communicat	ion, 3 ses	sions							[Courses delivered
These sessions will a communication and				asic knowl	edge re	quired for pao	eket data		(1) Category A course with practical
LAN and protocols, These sessions will o			otocols an	d a local ar	ea netv	vork (LAN) u	sing them.		(2) Details of instructor
Case study and deve These sessions will i examples of the appl case studies.	ntroduce	the current tren	ds in info				s and systems, with as analyze a number of		(3) Details of practical
Confirmation of lear Confirm (evaluate) a				ves of the c	ourse.				
					,	 Continue to 通	信ネットワーク(2)↓↓↓		

urse requirements] ng previously studied basic communication theory is desirable aluation methods and policy] ents will be comprehensively evaluated regarding their basic understanding of communication network sology based on regular examinations, reports, and exercises. cifically, regular examinations will be evaluated on a 100-point scale, and a maximum of 5 points will be of for each report and exercise assignment submission, for a total overall course score of up to 100 points. (tbooks] r, handouts will be distributed ferences, etc.] Reference books) 「情報ネットワークの基礎」数理工学社(本体2,300円+税) isbn{} {490168311X} isbn{ 田坂修一 84864810081} 、山本「情報ネットワーク工学」オーム社(本体2,800円+税) isbn{} {9784274206283} udy outside of class (preparation and review)] desirable that students have mastered the basic concepts of communications technologies ther information (office hours, etc.)) order of lectures in the above items may be changed depending on the instructor's circumstances ase visit KULASIS to find out about office hours. urses delivered by instructors with practical work experience] Category urse with practical content delivered by instructors with practical work experience Details of instructors' practical work experience related to the course etails of practical classes delivered based on instructors' practical work experience

マイクロ波工学(2)

未更新

Research Institute for Sustainable Huma

Year/semesters 2021/First semester

anguage of instructi

Professor,SHINOHARA NAOKI

Research Institute for Sustainable Humanospher Associate Professor, MITANI TOMOHIKO

Japanes

[Course requirements]

Radio Engineering, Maxwell's equations, theory of radio waves, electric circuits, Distributed parameter circuits

[Evaluation methods and policy]

Grading will be done with the result of the final report and several reports in lectures.

[Textbooks]

Masamitsu Nakajima Microwave Engineering (in Japanese) (Morikita Publishing) ISBN: 9784627710306

[References, etc.]

(Reference books) oshio Nojima and Yasushi Yamao 『RF Circuit Technologies for Mobile COmmunication (in Japanese)』 (IEICE) ISBN:9784885522222 Yoshihiro Konishi Theory and Applications of Microwave Circuits (in Japanese) (Sogo Denshi

Publishing) ISBN:4915449599

[Study outside of class (preparation and review)] A student should read text book before/after class.

(Other information (office hours, etc.))

Please visit KULASIS to find out about office hours

principle of mobile phones and the other microwave applications. [Course schedule and contents]

ower transmission are given. [Course objectives]

Course number U-ENG26 46036 LJ72

イクロ波工学

[Overview and purpose of the course]

Microwave Engineering

4th year students or above Number of credits 2

Class style

Course tit

(and course

Target year

Days and periods Tue.2

title in

English)

General concepts,1-2times,After confirmation of Maxwell's equations and wave guide theory, general concepts of microwave enginnering are presented as introduction of the following theme. Circuit theory of transmission line,2-3times,Characteristics of microwave transmission line and circuit ssion line and circuit theory of transmission line are given. Impedance matching and Smith Chart are given. Microwave passive circuits,2-3times,Connector, circuit device in waveguide, impedance matching load, attenuator, phase shifter, T-blanch, isolator, circuitator, directional coupler, power divider/combiner are given.

Lecture

Theory and applications of microwave transmittion line, microwave passive circuits, active circuits, and microwave tubes are given. Applications of thier devices and elements for mobile phones, radar and wireless

The course goal is to understand the principle of microwaves and microwave circuits and to understand the

name, job title

and department of affiliation

Microwave resonator and filter,2-3times,Microwave resonator and filter are given. Microwave tubes,1-2times,Generation/amplifier mechanism of microwave tubes of Klystron, TWT,

nagnetron are given.

Micorwave active circuits and semiconductor devices,2-3times,Diode as microwave passive semiconducotor and FET and HBT as microwave active semiconductors are given. Its applications like Parametric amplifier are given.

Microwave Applications,3-4times,Theory, requirements, and typical components of RF circuits in mobile communication are given. The other applications of radar, microwave heating, and wireless power transmission are given.

Confirmation of Understanding, I time, Student's understanding of this lecture is confirmed. Opportunity of feed-back lecture is given if the studen's understanding is not enough.

The order of instruction for each topic and subtopic may vary, and the course instructors will organize the lectures as appropriate for the students. Students will be informed of the lecture plan (for all 15 lectures) in advance and will have sufficient time for preparation.

- Continue to マイクロ波工学(2)↓↓↓

未更新	
Course number U-ENG26 36037 LJ72	計算機ソフトウェア(2)
Course title Instructor's	
(and course 計算機ソフトウェア name, job title, Graduate School of Informatics	[Evaluation methods and policy]
title in English) Computer Software and department of affiliation Professor,KUROHASHI SADAO	Evaluation will be based on assignments and an examination.
English)	[Textbooks]
Farget year Brd year students or above Number of credits 2 Year/semesters 2021/First semester	杉原厚吉 『データ構造とアルゴリズム』(共立出版)ISBN:4320120345
Days and periods Tue.2 Class style Lecture Language distinction Japanese	
[Overview and purpose of the course]	[References, etc.]
This course explains the basic data structure and various algorithms	(Reference books)
which are indispensable for the creation of various computer programs.	Donald E.Knuth 『The Art of Computer Programming Volume 1 Fundamental Algorithms Third Edition 日本語版』(ドワンゴ)ISBN:9784756144119
[Course objectives]	[Study outside of class (preparation and review)]
This course aims to understand the basic computer program and design it soundly by mastering the data structure and various algorithms and programming	Students should prepare and review the content of the lecture,
techniques.	focusing on exercise problems given in the lecture and assignments.
[Course schedule and contents]	(Other information (office hours, etc.))
[1 week] Algorithm and complexity	For details of office hours, please check with KULASIS.
What the algorithm is and how to measure the goodness of the algorithm.	
[3 weeks] Various data structures and algorithms	*Please visit KULASIS to find out about office hours.
List and heap as a basic data structure, and basic algorithms for those structures. [3 weeks] recursive call and split rule	
Is weeks recursive can and spin rule How to divide and solve complex problems into simpler smaller problems.	
[3 weeks] Graph search	
The graph structure and its search algorithm.	
[2 weeks] Dynamic programming	
The principle of optimality and dynamic programming.	
[2 weeks] How to measure and cope with difficulty of problems How to measure the difficulty of the problem itself, how to cope with difficult problems, public key	
cryptosystem using difficult problems.	
[1 week] Confirmation of learning achievement	
Review the achievement on the contents of this lecture.	
[Course requirements]	
It is required to take basic information processing, basic information	
processing exercises, exercise of computer programming in EE	
engineering (60620), and computer architecture basics (60160).	
Continue to 計算機ソフトウェア(2)↓↓↓	
	·

							未更新		
Course nun	nber U-El	NG26 36039 LJ72							
	司体電子工学 olid-State Elec	etronics	nar	tructor's ne, job til I departm iffiliation	nent	Graduate School of Engineering Professor,NODA SUSUMU Graduate School of Engineering Associate Professor,ASANO TAKASHI			
Target year	3rd year studen	year students or above Number of credits 2 Year/semesters 2021/Fit							
Days and period	s Wed.2	Class style	Lecture	e Language of instruction Japanese					
[Overview a	nd purpose	of the course]							
are solar cells, semiconductor lasers, and transistors. These devices are indispensable for all areas of technologies, and thus regarded as brains in society. In this lecture, we explain various phenomena based on electrons and photons in solid states, where the focus is on the interaction between solid states and photons via electron transitions. [Course objectives]									
Understanding of fundamental of band structures in solid state and the related phenomena such as light absorption and amplification based on the electron transitions between valence and conduction bands.									
[Course scl	nedule and c	ontents]							
Overview of solid-state electronics, Itime, After the explanation of progress in electronics based on solid-state electronics, we show the contents of this lecture. Fundamentals of solid-state electronics, 12times, First, we explain the method to derive band structure of solid state using Kronig-Penney model. Then, we describe various fundamental concepts in solid state, such as density of states, phonons, etc. Photon absorption in solid state, drimes, We will explain the mechanism of photon absorption in solid state, and derive some equations to expess the absorption quantitatively. Amplification of light,2?3times,We will explain the mechanism of optical amplification and derive some quantitative equations. Various photonic devices,3?4times,Various photonic devices based on the above discussions are given, such as solar cells, semiconductor lasers, etc. Verification of understanding,Itime,We confirm whether the students can understand the above subjects.									
[Course red	uirements]								
It is desirable	to learn some	related lectures suc	h as semico	nductor	s, func	lamental of m	aterial and devices, etc.		
[Evaluation	methods an	d policy]							
Examination a	nd submissior	a of a few reports							
					,	Continue to	固体電子工学(2)↓↓↓		

固体電子工学(2)

[Textbooks]

Note stile

[References, etc.]

(Reference books) We will show some references during the lecture

_ _

[Study outside of class (preparation and review)]

_ _ _ _ _ _ _

(Other information (office hours, etc.)) The numbers and order of course topics described above might be changed.

未更新	未更新
Course number U-ENG26 26040 LJ52 U-ENG26 26040 LJ72	Course number U-ENG26 36041 LJ77 U-ENG26 36041 LJ59 U-ENG26 36041 LJ52
Course title (and course title in English) 半導体工学 Instructor's name, job title, Semiconductor Engineering Instructor's name, job title, and department of affiliation Graduate School of Engineering Professor,KIMOTO TSUNENOBU	Course title (and course title in English) プラズマ工学 Plasma Engineering Dasma Engineering Plasma Engineering Plasma Engineering
Target year Ind year students or above Number of credits 2 Year/semesters 2021/Second semester	Target year Brd year students or above Number of credits 2 Year/semesters 2021/Second semester
Days and periods Tue.2 Class style Lecture language distinction Japanese	Days and periods Thu.5 Class style Lecture Laguage distution Japanese
[Overview and purpose of the course]	[Overview and purpose of the course]
[Course objectives]	
[[Course objectives]
[Course schedule and contents] Introduction to semiconductor engineering.1time.	[Course schedule and contents]
Semiconductor physics,4-5times, Band structure, carrier statistics, intrinsic/n-type/p-type, current transport (drift, diffusion), mobility, conductivity/resistivity, majority/minority carrier, Hall effect, optical properties, photoconductivity, photovoltaics, high-field effect	,1time, ,2?3times, ,6?8times,
Theory of pn junctions,3-4times,metal/semiconductor interface, ohmic and Schottky contacts, space charge, current-voltage characteristics, capacitance-voltage characteristics, generation/recombination, pn junction Transistors,4-5times,bipolar transistors, MOSFETs	,3?4times, ,1time,
Summary,1time,	[Course requirements]
[Course requirements]	None
None	[Evaluation methods and policy]
[Evaluation methods and policy]	
[Textbooks]	[Textbooks]
Hiroyuki Matsunami: Handoutai kougaku (Shoukoudou) isbn{} {4785612002} isbn{} {4785611308}	
[References, etc.]	[References, etc.]
(Reference books) WILEY S. M. Sze, Kwok K. NG quotquotPhysics of Semiconductor Devicesquotquotisbn{} { 9780471143239} isbn{} {9780470068304}.	(Reference books)
[Study outside of class (preparation and review)]	[Study outside of class (preparation and review)]
(Other information (office hours, etc.))	(Other information (office hours, etc.))
*Please visit KULASIS to find out about office hours.	*Please visit KULASIS to find out about office hours.

г

Course nur	nber	J-ENG26	36043 LJ72						Course num	ber U	J-ENG26	36044 LJ5	52 U
	重気電子标 lectrical a		nic Materials	nai and	tructor's me, job ti d departn affiliation	nent	Professor, YA Graduate Scl	nool of Engineering MADA HIROFUMI nool of Engineering fessor,KOBAYASHI KEI		工学 1 ndamenta	ls of Opti	cal Engine	ering
Farget year	3rd year s	udents or abov	Number of a	credits	2	Year	/semesters	2021/Second semester	Target year	3rd year st	idents or abo	Numbe	er of c
Days and period	s Wed.3	Clas	ss style Le	cture			Language of instruction	Japanese	Days and periods	Tue.2	Cla	ss style	Lee
[Overview a	and purp	ose of the	e course]						[Overview ar	nd purpo	se of th	e course]	1
[Course ob [Course sc		nd conter	nts]						reflection, inter addition, the pr [Course obje Cultivate an un	inciples o	f basic op	tical device	es and
1time, 4times,									[Course sch	edule an	d contei	nts]	
,2times, ,2times, ,3times, ,2times, ,1time,		(- 1							Overview of op These sessions about by the en and everyday aj Basic propertie These sessions	will discu nergence of pplication s of light	ss the hist of lasers a s of optoe waves, 2-2	torical deve fter provid electronics. 3 session	ling ex
[Course red None	quiremen	tsj							anisotropic med				
[Evaluation		and poli	icy]						Light wave refr These sessions media and expl occurring at the in absorbing me	will discu aining the boundar	ss total re Snell and	flection an I Fresnel fo	nd optiormula
[Textbooks									Interference and These sessions waves as well a	will discu	ss the cor	cept of col	
[Reference: (Reference)							interferometers interference pho optical resonate	, spectron enomena.	neters, Fal	ory-Perot o	optical
[Study outs	ide of cl	ass (prep	aration and re	eview)]					Light wave diff These sessions diffraction by F of diffraction in	will intro ourier tra	luce the c	oncept of s	
(Other info	rmation	(office ho	ours, etc.)	_						nuges.			
	ZIT ASIS	to find out	about office ho						+				

Course num	U-EN	G26 3	6044 LJ52	U-EN	G26	5 36044	LJ72				
Course title (and course) 光工学 1 Fundamentals of Optical Engineering 1 English)											
Farget year	r Brd year students or above Number of credits 2 Year/semesters 2021/Seco						2021/Second semester				
Days and periods	Tue.2	Class	s style	Lecture	e			Language of instruction	Japanese		
Specifically, the reflection, inter	ng on wave op e fundamental ference, diffrao	tics, w proper ction a	hich is an i ties of light s well as th	t waves, e analys	opt is o	fical phe feach, a	nomer and the	a such as ref fundamenta	optoelectronics. raction, transmission, ls of fourier optics. In ena will also be covered.		
[Course obje	ectives]							*			
Cultivate an understanding of the basic principles of light waves.											
[Course sch	edule and co	ntent	s]								
about by the en and everyday a Basic propertie: These sessions anisotropic mec Light wave refr These sessions media and expl	hergence of las pplications of o s of light wave will describe the dia based on M action/transmi will discuss tota aining the Snel boundary betw	ers aft optoeld s, 2-3 ne fun axwel ssion/n al refl 1 and 1	er providing ectronics. session damentals of l's equation reflection, 3 ection and of Fresnel form	of the tre ons and -4 session optical enulas with	eatm exp ons elem	of the re nent of li lain ligh nents as 1 form th	elation ght wave applic ne basi	ship between ave propagati e polarization ations after ta s for understa	this field brought optical engineering on in isotropic and		
Interference and coherence, 3-4 sessions These sessions will discuss the concept of coherence of light with respect to interference between two light waves as well as the basic concepts guiding the operation of optical devices such as Michelson interferometers, spectrometers, Fabry-Perot optical resonators, and thin-film optical devices using interference phenomena. In addition, the principle of a laser oscillator will be described as one application of optical resonators.											
	will introduce ourier transfor	the co	ncept of spa						nt of light wave with specific examples		
							,	Continue to			
) <u> </u>		

光工学1(2)

Confirmation of learning achievement, 1 session Confirm (evaluate) achievement of the learning objectives of the course.

[Course requirements]

Electromagnetics, Fourier transforms

[Evaluation methods and policy] On the periodic written evaluations, a passing score is considered to be 60 points or higher.

[Textbooks]

Other, 光工学(印刷テキスト) ibid{} {BB02620868}, handouts will be distributed as needed

[References, etc.]

(Reference books) Other, 現代光科学I(大津元一, 朝倉書店) isbn{} {4254210264}, ヘクト光学I, II(Eugene Hecht, 丸善株式会社) isbn{} {9784621073483} isbn{} {9784621074480}

[Study outside of class (preparation and review)] Follow the formulas presented in the lectures and textbooks until the derivation process is understood. Lectures will highlight the most important areas to understand, so please focus on review.

It is strongly recommended that students try to solve the exercises assigned for each lecture, and not just listen to the explanations only.

(Other information (office hours, etc.))

Please visit KULASIS to find out about office hours

未更新 Course number U-ENG26 46048 LJ72 Instructor's name, job title, and department of affiliation Course title (and cours 光通信工学 Graduate School of Informatics Professor,Oki Eiji title in Optical Communications English) 4th year students or above Number of credits 2 Year/semesters Farget year 2021/First semester Days and periods Thu.1 Class style Lecture anguage of instruction Japanese [Overview and purpose of the course] This course describes optical fiber communication. Optical networks that use optical communication system are explained. After the course explains optical characteristics and optical transmission, it explains signal propagation in optical fibers, optical signal sources, optical amplifiers, optical elements, and optical modulation and demodulation, considering the differences from conventional electronic communications. Then, the course explains optical networks that adopts optical consummation systems. [Course objectives] This course aims to help students to acquire the features of optical communications in comparison with those of electrical communications. [Course schedule and contents] Overview, 1 time, progress and present status of optical communications are described as the introduction of the course. Optical characteristics and optical transmission, 2 times. Signal propagation in optical fibers, 2 times. Optical signal sources, 1-2 times. Optical amplifiers, 2 times. Optical elements, 2 times. Optical modulation and demodulation, 1-2 times. Optical networks, 2-3 times. Feedback, 1 time [Course requirements] Modulation Theory in Electrical Communication (60320), Information Transmission (60330), Fundamentals of Optical Engineering 1(60440) [Evaluation methods and policy] Evaluation will be based on one final examination.

Continue to 光通信工学(2)↓↓↓

光通信工学(2)	Course number U-ENG26 46056 LJ72
[Textbooks] Not used	Course title (and course title in English) 光電子デバイス工学 Optoelectronic Devices Instructor's name, job title, and department of affiliation Graduate School of Enginee Associate Professor, NODA SUSUMU Graduate School of Enginee Associate Professor, ASANO T
[References, etc.]	Target year 4th year students or above Number of credits 2 Year/semesters 2021/First sem
(Reference books) Murakami Yasuji: Introduction to Fiber Optic Communication (Corona Publishing), isbn{} {	Days and periods Mon.4 Class style Lecture Lanuage distuction Japanese
9784339007602} Hideki Ishio: Optical Communication (Maruzen), isbn{} {9784621081082} Shinji Yamashita: Guide book for Optical Communication (Gijutsu-Hyohron Co.) isbn{} {4774114367} Yasuharu Suematu and Kenichi Iga: Introduction to Optical Fiber Communication (4th Edition) (Ohmsha) isbn{} {4274201988}	[Overview and purpose of the course] As the foundation for solid-state electronic engineering and semiconductor engineering to be taken by year students, detailed discussion is made of the theory of operations of various types of optical and electronic devices. Detailed explanation begins with the fundamentals of operations theory in optical of
[Study outside of class (preparation and review)]	[Course objectives]
Review after class.	Students will understand the physical background of spontaneous emission processes, as well as vario elements essential when considering spontaneous emission processes in semiconductors.
(Other information (office hours, etc.))	[Course schedule and contents]
Questions can be answered after class. Otherwise, make an appointment by email. For detail office hours, ckeck KULASIS. *Please visit KULASIS to find out about office hours.	Basic light emission processes (4-5 classes) An overview is made of spontaneous emission processes in two-level electron systems. Explanation is made of Fermi's golden rule, electric dipole interactions, density of light (photon) states, etc. Finally theoretical expression of the light-emitting relaxation rate is derived.
[Courses delivered by instructors with practical work experience] (1) Category A course with practical content delivered by instructors with practical work experience (2) Details of instructors' practical work experience related to the course	Light emission processes from semiconductors (4-5 classes) An overview is presented of the processes from energy input to a semiconductor, to light emission. Ne physics of light-emitting devices are explained.
(3) Details of practical classes delivered based on instructors' practical work experience	Using electron-hole state density and distribution functions, etc., theoretical formulas of emission spec the steady state are derived. Rate equations describing the transient state are also derived, with explana the elements that determine luminous efficiency.
	Control of electron state and emission characteristics (4-5 classes) Light-emission characteristics can be controlled via control of the electron states of a semiconductor li emitting device. Explanation especially focuses on methods of improving emission characteristics by quantum structure. Various quantum structures using semiconductor heterostructure are discussed. Explanation is also made of methods of calculating quantization level and of electron devices that use quantum structure.
	Confirmation of extent of student learning (1 class) Confirmation is made of the extent of student learning.

٦ [

	未更新
光電子デバイス工学(2)	Course number U-ENG26 26057 LJ72 U-ENG26 26057 LJ52
	Course title Instructor's Graduate School of Engineering
[Course requirements]	(and course 光工学 2 name, job title, Associate Professor, FUNATO MITSUR
It is desirable that students be taking, or have taken already, solid-state electronic engineering and semiconductor engineering courses.	title in English) Fundamentals of Optical Engineering 2 and department of affiliation Graduate School of Engineering Professor,KAWAKAMI YOUICHI
[Evaluation methods and policy]	Target year 4th year students or above Number of credits 2 Year/semesters 2021/First semester
Reports (1 or 2 times) and tests.	
[Textbooks]	Days and periods Mon.2 Class style Lecture Language distruction Japanese
The lecture notes format is used in this course.	[Overview and purpose of the course]
	Lectures covering the basic aspects related to the operational mechanism of the laser, a coherent light wave oscillator, specifically, the amplification of light by sustained emission, the characteristics of optical
[References, etc.]	resonators, analysis of oscillation operation, and finally an overview of various laser devices.
(Reference books)	
Takashi Kushida 『Optical Properties and Spectroscopy of Solids』 (Asakura Publishing) ISBN: 4254130511 (in Japanese)	[Course objectives] Cultivate an understanding of the fundamental operating principles of lasers underpinning the basic concepts
Other reference books will be introduced during the course.	of quantum electronics.
[Study outside of class (preparation and review)]	[Course schedule and contents]
Nothing of note.	Overview of laser engineering, 1 session
•	This session will describe the historical development of quantum electronics and the significance of laser
(Other information (office hours, etc.))	technology, and establish the role of the course.
Changes may be made in the order of course classes and/or in the time allocated for each topic.	Basic physics of lasers, 3-4 sessions
*Please visit KULASIS to find out about office hours.	These sessions will discuss the interaction between matter and electromagnetic waves, specifically, the theory of absorption, emission, and amplification of light by sustained emission, as a basis for understanding the
	or absorption, emission, and amplification of right by sustained emission, as a basis for understanding the operation of laser technologies.
	Laser operation analysis, 5-6 sessions
	These sessions will discuss Q-switched lasers and mode-locking as special examples of laser operation in addition to fostering understanding of laser oscillation conditions and the operation of multi-level systems.
	Laser optical resonators and Gaussian beams, 3-4 sessions
	These sessions will discuss the various types and characteristics of resonators required for laser oscillators and procedures for the analysis of Gaussian beam propagation as a laser beam.
	and procedures for the analysis of Gaussian beam propagation as a fast ream.
	Laser devices, 1 session
	This session will provide an overview of the characteristics of laser devices using various laser media such as gases, liquids, solids, and semiconductors, and also discusses the engineering fields that utilize these
	characteristics.
	Confirmation of learning achievement, 1 session
	Confirm (evaluate) achievement of the learning objectives of the course.
	Continue to 光工学 2 (2) ↓ ↓
	」 ││ ┗━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━

七工学 2 (2)	Course nun
	Course title
[Course requirements]	(and course 립
Optics 1, Electromagnetics	title in La English)
Evaluation methods and policy]	
A report evaluation will be conducted at the end of the term to evaluate students' level of understanding. A assing score is 60 points or higher out of a possible 100 points. In addition, report tasks will be assigned as eeded to improve understanding, but these will not be directly added to a student' s course score.	Target year
eeded to improve understanding, out mese will not be uneerly added to a student s course score.	Days and period
[Textbooks]	[Overview a
ther, lecture notes, handouts will be distributed as needed	This course di with energy, e
[References, etc.]	
(Reference books)	[Course obj
)ther, ヤリフ著 多田,神谷訳:光エレクトロニクスの基礎(丸善) isbn{} {4621033107}. ヽクト著 尾崎,朝倉訳:光学III(丸善) isbn{} {4621072609}	By learning ab technologies a
[Study outside of class (preparation and review)]	
Review of course material is recommended as lectures are designed for note-taking.	[Course sch "1. History of
.asers are everyday devices. It is hoped that studying topics and areas of practical interest, such as pplication examples, will help lead to understanding of the basic content of the lecture. (Other information (office hours, etc.))	Explain the his electricity bus content of reg
some lecture contents may be omitted.	2. Quality of e
Please visit KULASIS to find out about office hours.	Explain the qu technologies.
	3. Electric pov
	Explain the el facilities and o
	4. Electric pov
	Explain challe electric power
	5. The global
	Explain globa to achieve a lo

	U-EN0	G26 4605	8 LJ72								
Course title (and course title in English) Laws and Regulations of Electric Power Engineerin						tructor's ne, job ti I departn Iffiliation	tle, nent	関西電力送配電(株) FUJIOKA NAOTO Part-time Lecturer,IWANE HIRONORI Graduate School of Engineering Professor,MATSUO TETSUJI			
									2021/Intensive, First semester		
Days and periods Inte	ensive	Class st	yle	Lecture	•			Language of instruction	Japanese		
[Overview and p	urpose o	f the co	urse]					<u> </u>			
This course discusse with energy, enviror									ning their relationship ndustry Law.		
[Course objectiv	es]										
0	eir safety, a	and gain t							gy supply technician.		
[Course schedul "1. History of the el		-									
electricity business l content of regulation	has played ns, their le	, electrica gal positio	l safety	, change	s in				ordinances, the role the ical standards, the		
2. Quality of electric	2 power (2	classes)									
	to accurate	ly unders	tand pre	esent co	ndit	ions in t			ds in electric power ess and the quality of		
3. Electric power sy	stem appli	cations (1	class)								
Explain the electric facilities and disaste									role of electric supply		
4. Electric power liberalization and nuclear energy (1 class)											
Lieute power ne	Explain challenges related to the electricity business, the trend toward deregulation and liberalization of electric power, and the current state of affairs of nuclear power generation.										
Explain challenges i		state of a	inairs of	r nuclea							
Explain challenges i electric power, and t	the current					tive ene					
Explain challenges r electric power, and 5. The global enviro	the current onment and ronmental	l energy c issues suc	onserva	tion/alte	erna min	ig, as we	rgy (1 ell as e	class) electricity bus	iness initiatives aiming nservation.		

	未更新
電気法規(2)	Course number U-ENG26 46059 LJ72
6. Confirmation of learning attainment (1 class) Confirm the degree of learning attained with regard to the course overall."	Course title (and course title in English) 電波法規 Laws and Regulations of Radio Wave Engineering Instructor's name, job title, and department of affiliation Research Institute for Sustainable Humanosphere Professor, SHINOHARA NAOKI
[Course requirements]	Target year 4th year students or above Number of credits 2 Year/semesters 2021/Intensive, Second semester
Basic information concerning electricity generation, electricity transmission, electricity transformation, and electricity distribution.	Days and periods Intensive Class style Lecture Laquage distructor Japanese [Overview and purpose of the course]
	In recent years, radio wave technology such as satellite communication, cellular phones, wireless LAN, and
[Evaluation methods and policy] Grade is based on the number of classes attended and score on the examination (administered at the final class meeting). [Textbooks] In addition, printouts	so on has been remarkably developed. In postwar Japan, radio wave administration is promoted mainly on the basis of the Radio Law and the Broadcast Act. In particular, the Radio Law, which aims to promote public welfare by ensuring the fair and efficient utilization of radio waves (Article 1), fulfills a key role in a society that uses radio waves. This course discusses the establishment of radio wave legislation and basic matters on the Radio Law and its related laws and regulations. This is a required course for those wishing to obtain qualification as the First Class On-The Ground Special Radio Operator or the Third Class Maritime Special Radio Operator.
[References, etc.]	[Course objectives]
(Reference books)	The purpose of this course is to gain an understanding of basic matters concerning the establishment of Japanese radio wave legislation and laws and regulations related to radio waves.
[Study outside of class (preparation and review)] Will be discussed as needed.	[Course schedule and contents] Overview of the Radio Law, 1 class: Discuss the foundational principles of the Radio Law, the structure of its provisions, its subjects of regulation, its relationship with international laws, as well as other laws and ordinances, definitions of terms, classification of radio stations, and so on. History of radio wave legislation, 1 class: Discuss the history of radio wave legislation beginning in the dawn
(Other information (office hours, etc.)) *Please visit KULASIS to find out about office hours.	of radio wave technology, postwar hstory of the Radio Law, the Broadcast Act, and the Act for Establishment of Radio Regulatory Commission. Basic matters on the Radio Law, 10 classes: Licensing and registration of radio stations, reasons for disqualification, licensing procedures, blanket licensing, etc.; Radio operator qualification, radio operator in charge; Technical regulations of radio equipment, Technical Regulations Conformity Certification, Model
[Courses delivered by instructors with practical work experience] (1) Category A certificate-bearing course that includes practical classes related to the certificate. (2) Details of instructors' practical work experience related to the course	Examination of Radio Equipment etc.; Basic principles of radio station operation, retained documents, etc., communication methods, etc.; Supervision, inspection of radio stations, radio propagation blockage prevented area, radio wave usage fees; Overview of related laws and regulations. On recent law amendments, 1 class: Explain major recent amendments. Actual operation of radio stations, 2 classes: Explain the actual examples of radio stations such as experimental stations and their related regulations.
(2) betails of instructors - practical work experience related to the course	
(3) Details of practical classes delivered based on instructors' practical work experience	[Course requirements] None

	未更新
電波法規(2)	Course number U-ENG26 26060 LJ11 U-ENG26 26060 LJ72
[Evaluation methods and policy] Attendance in class is required to pass, and grading is based on the results of in-class quizzes. [Textbooks]	Course title (and course title in English) ディジタル回路 Digital Circuits Instructor's aname, job title, and department of affiliation Graduate School of Informatics Professor, HASHIMOTO MASANOR Graduate School of Informatics Associate Professor, AWANO HIROMITS
Materials will be distributed.	Target year Brd year students or above Number of credits 2 Year/semesters 2021/First semester
[References, etc.]	Days and periods Thu.2 Class style Lecture Language distruction Japanese
(Reference books) Shimei Imaizumi 『Radio Law Summary (in Japanese)』 (Denki Tsushin Shinko-kai) ISBN: 9784807607693	[Overview and purpose of the course] This lecture covers basics of digital circuits. First, fundamental properties of digital signals such as frequency characteristics, transmission and shaping of digital signals will be explained. Next, switching operation of semiconductor devices such as diodes, bipolar transistors and MOS transistors will be examined. Finally, circuit structure and performance of logic gates and memories for digital integrated circuits will be discussed.
[Study outside of class (preparation and review)]	
No need.	[Course objectives] From this lecture you can understand basic properties of digital signals and linearized circuits. To understand
(Other information (office hours, etc.))	operating principles, circuit performance, and design method of logic gates and memories.
*Please visit KULASIS to find out about office hours.	[Course schedule and contents]
	Following topics will be covered. By assessing the understanding of the students and adding explanations and tasks when necessary, we will spend the number of weeks listed in [].
	 Basic properties of digital signals [2 weeks] Frequency spectrum of digital signals and step response of linearized ircuit will be explained.
	(2) Transmission of digital signals [2 weeks] Signal transfer characteristics of loss-less transmission lines will be explained. Lossy transmission lines will also be covered.
	(3) Switching characteristics of semiconductor devices [3 weeks] DC and transient characteristics of pn junction diodes, bipolar transistors, MOS transistors will be explained.
	(4) Waveform shaping of digital signals [1 week] Waveform shaping circuits such as a clipper, limiter, and Schmitt-trigger circuits will be explained.
	(5) Bipolar digital circuits [2 weeks] Basic logic gates using bipolar transistors are explained. First, DC and transient characteristics of an bipolar inverter circuit will be analyzed. Next, circuit configuration, operating principle and circuit performance of an ECL gate will be discussed.
	(6) MOS digital circuits [3 weeks] Basic logic gates using MOS transistors are explained. Circuit configuration, operating principle and circuit performance of a complementary logic gate, a complex logic gate, and a dynamic logic gate will be discussed
	Continue to ディジタル回路(2)↓↓

ディジタル回路(2)	Course number U-ENG26 36061 LJ72
7) MOS memory circuits [1 week] Circuit configuration of ROM and RAM will be explained.	Course title (and course title in English)
8) Confirmation of understanding [1 week] The level of understanding on this lecture will be confirmed. Feedback will be given if necessary.	Target year Brd year students or above Number of credits 2 Year/semesters 2021/Second semesters
[Course requirements]	Days and periods Mon.4 Class style Lecture Language distution Japanese
Semiconductor Engineering, Logic Circuits, Electronic Circuits	[Overview and purpose of the course]
[Evaluation methods and policy]	The goal of this lecture is to understand fundamental theories and filter designs for one-dimensional time- domain signal and two-dimensional image processing and encoding. In particular, this course provides
The level of achievement toward the goal of this lecture will be examined by a regular exam.	 administratiant vocumensional image processing and encoding. In particular, this course provides introductions to orthogonal transformation such as discrete Fourier transform, fast Fourier transform algorithms, one-dimensional and two-dimensional signal encoding methods including basics of JPEG / MPEG, and FIR and IIR filters based on the discrete-time linear time invariant system theory
Iand-outs will be provided.	[Course objectives]
	Digital signal processing requires both theoretical analysis / design and practical software system
References, etc.]	implementations. This course provides exercises on signal processing in Python, with guidance by teaching
(Reference books) ntroduced during class	assistants, and additional resources via the course web site. Short questions and answers are also provided help understand the theories and implementations.
	[Course schedule and contents]
[Study outside of class (preparation and review)] Plactices in the handout should be solved after the corresponding topic is covered by the lecture.	Overview of digital signal processing (2 classes) * Introduction of the goal of digital signal processing, its essential ideas and advantages. * Extension of 1D Fourier transform to 2D or multi-dimensional signals and its applications in computed
(Other information (office hours, etc.))	tomography (CT).
Please visit KULASIS to find out about office hours.	Sampling and quantization (1 class) * Sampling theories in 1D signals and digitization process of 2D images.
	Discrete Fourier transform and FFT (3 classes) * Discrete Fourier transform in 1D signals. * Fast Fourier transform and its extension to 2D image signals.
	Orthogonal transformation and short-time Fourier transform (3 classes) * Discrete cosine transform and digital signal processing based on orthogonal transformation. * Short-time Fourier transform. * Multi-scale signal analysis and its extension to wavelet transform.
	Encoding (2 classes) * Waveform coding, vector quantization, and transform coding. * Media encoding for audio, document images, images (JPEG) and videos (MPEG).
	Filtering based on discrete-time systems (3 classes) * Discrete-time linear time-invariant system and z transform.
	Continue to ディジタル信号処理(2)↓

· · · · · · · · · · · · · · · · · · ·	ディ	ジタ	ル信号処理(2)	
---------------------------------------	----	----	----------	--

* FIR and IIR filters

* Basics on linear phase FIR filter and IIR filter design.
 * Filtering of 2D image signals.

[Course requirements]

Industrial Mathematics E1 (20540) and Fundamental Communication Theory (60320) are prerequisites for this course. Students should take Digital Control (60270) in parallel.

[Evaluation methods and policy]

Grade evaluations will be based fundamentally on scores in the written final test. Evaluation will also be provided for the development of "non-trivial" digital processing software and reports on the functions, designs, performance evaluations, etc., of the software.

[Textbooks]

Instructed during class

[References, etc.] (Reference books)

Allen B. Downey "Think DSP: Digital Signal Processing in Python," (O'Reilly Media) ISBN:149193845; (Online versions are available at http://greenteapress.com/wp/think-dsp/)

(Related URLs)

http://greenteapress.com/wp/think-dsp/(An online version of "Think DSP")

[Study outside of class (preparation and review)]

Students should improve programming skills in Python through digital signal processing exercises provided in the lecture.

(Other information (office hours, etc.))

Students should bring their own laptop for exercises in Python.

*Please visit KULASIS to find out about office hours.

未更新
 Course number
 U-ENG26 26062 SJ11
 U-ENG26 26062 SJ72
 Graduate School of Informatics Course titl Professor, KUROHASHI SADAO 電気電子プログラミング及演習 name, job title, and department of affiliation (and course Graduate School of Informatics Associate Professor, NOBUHARA SHOUHEI Graduate School of Informatics Associate Professor, NAKAO MEGUMI title in cercise of Computer Programming in Electrical and Electronic Engine English) Year/semesters 2021/First semester 2nd year students or above Number of credits 2 Target year Days and periods Wed.4,5 Class style anguage of instruction Japanese Semina [Overview and purpose of the course] This course is aimed at learning programming in C, one of the most popular procedural programming languages in practice. The topics include: fundamental concept of programming, various data structures and control flows, practical skills on using compilers and debuggers. [Course objectives] To understand the fundamental concept of programming, data structures, and control flows as well as to learn ractical skills on using compilers and debuggers. [Course schedule and contents] Introduction (1 class) Introduction of the importance and contributions of computer programming, followed by some instructions on weekly reports and a final project. Prerequisites of Programming (3 classes) Usages of C compilers and debuggers. Basic knowledge in C such as operators, data types and their representations inside the computer, control flows. Basic Programming (4 classes) Arrays, multi-dimensional arrays, functions, scopes, bit-operations, recursive calls. Advanced Programming (3 classes) Strings in C and their representations inside the computer, pointers, structures, file I/Os. Final Project (4 classes) A final project of this year. [Course requirements] "Exercises in Information Processing Basics" (basic skills on using UNIX-like systems) will be necessary For weekly assignments and the final project, one will need to bring your own laptop PC (Windows, macOS, Linux) at every class. Students are encouraged to install the programming environment by following the instructions available at PandA before the 1st week of the course. Continue to 電気電子プログラミング及演習(2)↓↓↓

	大更新
電気電子プログラミング及演習(2)	Course number U-ENG26 16063 LJ72
Evaluation methods and policy] 1) weekly reports, (2) a final project, and (3) an interview on the final project. Textbooks]	Course title (and course title in English) 電気回路基礎論 Fundamentals of Circuit Theory and department of affiliation and epartment of af
ohyoh Shibata 『Meikai C Gengo Nyuumon-hen』 ISBN:9784797377026 (in Japanese)	Target year Ist year students or above Number of credits 2 Year/semesters 2021/First semester
	Days and periods Tue.5 Class style Lecture Laquage distriction Japanese
References, etc.]	[Overview and purpose of the course]
(Reference books) hinese (ISBN: 9789862010426) and Korean (ISBN: 9788991767447) translations of the textbook are vailable.	The course introduces the fundamentals of the electric circuit. Topics covered include: resitive elemnts and networks; independent sources; switches and dynamics of first- and second-order networks; phasor analysis; 2-port circuits.
	[Course objectives]
(Related URLs) ttps://panda.ecs.kyoto-u.ac.jp(Select "2019 Exercise of Computer Programming in Electrical and Electronic	Students are expected to learn the transient analysis by differential equation and steady state analysis by phasor.
ingineering")	[Course schedule and contents]
Study outside of class (preparation and review)]	DC circuit,3times,We introduce Kirchhoff#039s current law and Kirchhoff#039s voltage law, Ohm#039s law
he course can cover only the essential points in programming. Students are encouraged to study by nemselves with the textbook. (Other information (office hours, etc.)) Please visit KULASIS to find out about office hours.	and independent sources. Differential equation of circuit,5times,We introduce inductors and capacitors and explain the differential equation of circuit. AC circuit,4times,We introduce phasor and explain the steady state analysis. two-port circuit,2times,We extend one-port elements to two-port circuits. academic achievement test,1time,The level of understanding on this lecture will be confirmed.
	[Course requirements]
	None
	[Evaluation methods and policy]
	Reports and examinations
	[Textbooks]
	奥村浩士『エース電気回路理論入門』(朝倉書店)ISBN:4254227469
	[References, etc.]
	(Reference books)
	[Study outside of class (preparation and review)]
	After the lesson, solve problems in the text.
	(Other information (office hours, etc.))
	*Please visit KULASIS to find out about office hours.

Course title (and course title in English)	U-ENG2636 公最適化 Optimization	5066 LJ72	Instructor's name, job ti and departr of affiliatior	tle, Graduate Sc nent Associate Profe	hool of Engineering ssor,SAKAMOTO TAKUY.
Target year Brd y	ear students or above	Number of	credits 2	Year/semesters	2021/Second semester
Days and periods Tue.3	Class	sstyle L	ecture	Language of instruction	Japanese
[Overview and pu	rpose of the	coursel			
	- mentals of linea optimal solution	s, convex spa	ice and convex fi		implex method, duality, conditions and basic
[Course schedule		-			problems, mathematical
preliminary Linear programming simplex method and sensitivity analysis Nonlinear programm solution and globally	simplex tableau ing problems,1t optimal solution nonlinear progr	i, duality, dua ime, definition, n, convex spa ramming prol thout constra	al problems, dual n of nonlinear pr ace and convex f blems without co	ity theorem, dual si ogramming problem unction, mathemation nstraints,2-3times,c	ns, locally optimal cal preliminary ptimality conditions for
nonlinear programmi Newton method, and Solution methods for nonlinear programmi saddle point theorem method	quasi-Newton 1 nonlinear prog ng problems wi , penalty functio	ramming prol th constraints on method, m	blems with const s, Lagrange funct ultiplier method,	ion, Lagrange mult and sequential qua	mality conditions for plier method, duality,
nonlinear programmi Newton method, and Solution methods for nonlinear programmi saddle point theorem method Review, 1 time, The le [Course requirem	quasi-Newton i nonlinear prog ng problems wi , penalty function vel of understar nents]	ramming prol th constraints on method, m	blems with const s, Lagrange funct ultiplier method,	ion, Lagrange mult and sequential qua	mality conditions for plier method, duality,
nonlinear programmi Newton method, and Solution methods for nonlinear programmi saddle point theorem method Review, l time, The le	quasi-Newton i nonlinear prog ng problems wi , penalty function vel of understar nents]	ramming prol th constraints on method, m	blems with const s, Lagrange funct ultiplier method,	ion, Lagrange mult and sequential qua	mality conditions for plier method, duality,
nonlinear programmi Newton method, and Solution methods for nonlinear programmi saddle point theorem method Review, 1 time, The le [Course requirem	quasi-Newton n nonlinear prog ng problems wi , penalty function vel of understar alytics ods and polic	ramming prol th constraints on method, m ading on this	blems with const s, Lagrange funct ultiplier method, lecture will be co	ion, Lagrange mult and sequential qua nfirmed.	mality conditions for plier method, duality,

システム最適化(2)

[Textbooks] H. Tamaki (ed.): System Optimization (in Japanese), Ohm-sha, 2005 isbn{} {4274201627}.

[References, etc.]

(Reference books) M. Fukushima: Introduction to Mathematical Programming (in Japanese), Asakura, 1996 isbn{} { 9784254209754} isbn{} {9784254280043}.

(Related URLs)

(http://turbine.kuee.kyoto-u.ac.jp/~furutani/system-optimization/)

[Study outside of class (preparation and review)] Will be discussed as needed.

(Other information (office hours, etc.)) The contents of the lecture and their order are subject to changes depending on the situation each year.

Course number U-ENG26 36072 LJ72		未更新	パワーエレクトロニクス(2)
Course title (and course /パワーエレクトロニクス title in English)	Instructor's name, job title, and department of affiliation	Graduate School of Engineering Professor,HIKIHARA TAKASHI Part-time Lecturer,CASTELLAZZI, Alb	(Related URLs)
Farget year Brd year students or above Number of cre	dits 2 Yea	ar/semesters 2021/First semester	(Lecture data are offered on kulasis or Panda.)
Days and periods Mon.1 Class style Lectu	ire	Language of instruction Japanese	[Study outside of class (preparation and review)]
[Overview and purpose of the course]			
Power Electronics is a filed of power conversion and semiconductor devices. In class, fundamental lectures circuit and circuit behavior in transient. The application motors by conversion circuits. [Course objectives] Students are expected to learn the method of power conversion circuits and semiconductor engineering. The achieving the functions of actuators through the contre [Course schedule and contents] Outline of power electronics, 4times, Introduction of po- based on stored energy and power and switching circuits semiconductor engineering. Ic/dc convertors, 4times, The dynamic behavior and cl explained. ac/dc convertors, 4times, Various conversion circuits and phase circuits are lectured with the analysis of harmon allications of power electrines, 2times, As the application power and the analysis of harmon	include the basic ons include the cor- powersion and its a ey are also request ol of electric power ower electronics. I, uit are lectured. The aracteristics of Bu re explained. Confi	of poser conversion by switching throl methods of power sources and pplications based on circuit theory, ed to understand the method for r convertor. Fundamental topics of LRC circuit ne lecture will be interconnected wit tack and Boost converters are Tigurations of single phase and three output.	(Other information (office hours, etc.)) Students are recommended to download the note from home page and study them before the classes. If you miss one of the mid and final exam, it becomes too hard to pass this class. Taking the follow-up lecture will be requested to the students who is difficult to pass the requested level. *Please visit KULASIS to find out about office hours.
are lectured. Summary,1time,The classes are summarized. This is	he feedback to stu	dents according to their score.	
[Course requirements]			
Electric circuit, Electronic circuit, Power circuit, and	Electric apparatus.		
[Evaluation methods and policy] The final evaluation is decided based on examination [Textbooks] Lecture notes will be posted at the web page. [References, etc.] (References, etc.] [There are many supplemental texts. If students requestion of the students requesti	t their English ver	sion, please contact to the professor Continue to パワーエレクトロニクス(2)↓	

										未更新
Course nu	mber	U-EN	G26 1	6074 LJ72						
· · · · · · · · ·		子工学概 on to Elecric		Electronic Eng	gineering	nam and	ructor's ne, job tit departm ffiliation	nent	Associate Prof Institute of A Associate Prof Graduate Sch Associate Profes Graduate Sch	ool of Engineering essor,OKAMOTO RYOU dvanced Energy essor,KADO SHINICHIRC tool of Informatics sor,SHINKUMA RIYOUICH nool of Engineering esor,SAKAMOTO TAKUY.
Target year	lst y	ear students (or above	Number o	of cred	its	2	Year	/semesters	2021/Second semester
Days and perio				s style	Lecture	,			Language of instruction	Japanese
[Overview	and p	urpose o	of the	course]						
their investig them by then acquaintance to recognize the first and	ations. nselves with te that it is second	The stude and by ex achers an s essential year, thore weeks ar	ents aro plaini d seni l to un ough t nd con	e expected t ng the resul or students derstand the he investiga tinue for tw	o deeply ts to oth (in the fi e content ation of t	/ uno er st inal ts le the l e-un	derstand tudents. year, ar ctured i ab and	d the a The s nd in n n the b specia	ctivities by ac tudents are all naster or PhD basic courses 1 lectures. The	have a presentation of tively investigating so expected to make course) in the lab, and that they will learn in e class will be usually class number of times
[Course of	ojectiv	es]								
electronic en students will Electric and	gineerin make to Electron ir inves	ng and sin eams, and nic Engine tigations t	nultan each eering throug	eously how team will in Course. Th	they dev vestigat e teams	velo e th cov	p their i e activit er all of	faculti y of a the la	es in the field laboratory the bs, and the stu	f the electric and For this purpose, the at belong to the adents will share the view of the field of the
[Course so	hedul	e and co	nten	ts]						
Overview (1 A overview (time): of the ea er an in	lucation t	hat wi	ll be provid						eering Course is on of each laboratory
Visiting labo Each team vi and investiga	sits the	assigned	labora		belongs	to ti	he Elec	tric an	d Electronic I	Engineering Course,
Visiting labo Each team vi and investiga										
U	tes the				belongs	to ti	he Elect	ric an	d Electronic E	Engineering Course,
Preparation of		activities	in the	lab.	belongs	to ti	he Elect	tric and	d Electronic E	Engineering Course,

電気電子工学概論(2)

The students prepare a poster presentation to introduce the activities in the laboratory B that they visit and investigate.

Presentation (1 time): Each team performs a poster presentation. The students learn the activities in the laboratories that belong to the Electric and Electronic Engineering Course from the poster presentations of the other teams.

[Course requirements]

lone

[Evaluation methods and policy]

The grading is conducted by evaluation of various points, including the attendances at the lectures, the visit to the laboratories, and the presentation; the scores of the report; the score of the presentation.

[Textbooks]

The materials will be distributed.

[References, etc.]

(Reference books) The materials will be distributed.

[Study outside of class (preparation and review)] A report should be prepared before visiting each laboratory. The student should summarize three keywords related to each laboratory. The three keywords will be announced at Overview.

(Other information (office hours, etc.))

There is a possibility that some parts of the lectures would be removed or some new lectures would be additionally included, according to the total class number of times.

	course 電気電子計算工学及演習 name, job title, in Computational Methods and Electricis in Electrical and Electronic Engineering and department Associate Professor, YOKOYAMA TATSUHIRO					
Course num	nber U-El	NG26 26080 SJ7	2		未更新	電気電子計算工学及演習(2)
Course title (and course 琵	∎ 〔〔〕〔〕〕〕		name, jol ronic Engineering and depa	Professor Research Ins b title, Research Ins triment Associate I Graduate Graduate Graduate	,AMEMIYA ŇAOYŬKI titute for Sustainable Humanosphere vrofessor,EBIHARA YUUSUKE titute for Sustainable Humanosphere pfessor,YOKOYAMA TATSUHIRO School of Engineering vcturer,MIFUNE TAKESHI School of Informatics	[Textbooks] Instructed during class [References, etc.] (Reference books)
Target year	Brd year student	s or above Numbe	r of credits 3	Year/semeste		Introduced during class
Days and periods	s Thu.1,2	Class style	Seminar	Language of inst	utior Japanese	[Study outside of class (preparation and review)]
[Overview a	and purpose	of the course]			*	Students are expected to study on exercise problems at home.
electronic engi to solve the rel	ineering. In ad lated problems	dition, the course		cal analysis require o develop the skills	l for electrical and in computer programming	(Other information (office hours, etc.)) *Please visit KULASIS to find out about office hours.
in electrical an	xpected to und nd electronic er	ngineering.		well as the backgro carry out various n	und of numerical analyses umerical analsyes.	
Numerical exp Solution of lin Solution of no Solution of eig Interpolation a Solution of orce	hear equation,2 onlinear equation genvalue proble and numerical dinal differentian urtial differentian	rors in computer ?3 times, on,2?3 times,	imes, iimes,			
[Course req						
Linear algebra precalculus	a					
[Evaluation	methods an	d policy]				
Grading will b	e made based	on reports, interv	view, attendance to	the class, and seve	ral quizzes. 電気電子計算工学及演習(2)↓↓↓	

Course nu	mber	U-ENG26 3	6081 LJ72						
		子工学のための Quantum for Electrical		ingineering	nan and	tructor's ne, job tit I departm ffiliation	nent		nool of Engineering KEUCHI SHIGEKI
Target yea	· Brd y	year students or above	Number	of cred	its	2	Year	/semesters	2021/First semester
Days and perio			s style	Lecture	e			Language of instruction	Japanese
Quantum me It is also esse such as quan mechanics. A equation and	chanics ential fo tum con After dis some s	or understanding mputers and qua scussing the coll	ehavior of e current ele ntum crypt apse of clas explained.	etronic ography ssical m After th	devi . In echa at, v	ces and this lect unics and we discu	variou ure, w d old c uss the	is advanced q e explain base juantum theor general prope	indation of natural law. uantum technologies ic matters on quantum y, the Schrödinger erties of the wave science will be
concepts of and to be abl	physica juantum e to per	al image of the b	h as superp c calculatio	osition s	state	, uncert	ainty p		and fundamental ntum entanglement, etc.
 Overview After describ mechanics and 	and old ing ger nd the o	l quantum theory neral features and ld quantum theo	(2~3time d applicatio ory.		ianti	um mec	hanics	, we explain t	he collapse of classical
	e the Sc			cuss its	eige	nvalue j	proble	ms of two din	nensional and three
		that $(1 \sim 2 \text{ times})$ mics of quanta		evolutio	n op	erator.			
In order to d	iscuss tl xplain c		rties of way	ve funct					near space (Hilbert ertainty principle will
		n information te um information t				ed.			
								Continue to 電気電	子工学のための量子論(2)↓↓↓

電気電子工学のための量子論(2)

[Course requirements]

Basic knowledge of linear algebra, Fourier analysis, differential equation, dynamics, electromagnetism.

[Evaluation methods and policy]

Evaluate (From 0 to 100 points) comprehensively by regular test (60%), quizzes during lectures(20%), and some reports(20%). The submission of the reports are in principle mandatory.

[Textbooks]

Official textbook is not assigned.

[References, etc.]

(Reference books) ome textbooks for reference will be introduced during the lecture.

[Study outside of class (preparation and review)]

Preliminary review and review are indispensable. Some report tasks will be given (mandatory).

(Other information (office hours, etc.))

Depending on the progress situation, the order of lecture items may be changed or some may be omitted.

*Please visit KULASIS to find out about office hours.

[Courses delivered by instructors with practical work experience]

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

(2) Details of instructors' practical work experience related to the course The professor have been involved in the research of quantum information technology at a company.

(3) Details of practical classes delivered based on instructors' practical work experience In this lecture, how quantum theory has been used in society will be discussed.

大変を Course number 12-ENC265 2010 1272 Course number 第二次第二子計算 Statistic To Proceedings Statistic To Proceedings Course number 12-ENC265 2010 1272 Course number Statistic To Proceedings Development Finition Statistic To Proceeding Interproceding Interproced										
Course number U-ENG26 26101 L172 Course number U-ENG26 26101 L172 Course number U-ENG26 26101 L172 Use in decomp If (AG 7/H)III mediation (AG A) Instruction (AG A) Target year Jayar industric daw Number of credits 2 Year/second fri.3 Class style Lecture Impair friand Downow and purpose of the course) Interview (III) Interview (III) Downow and purpose of the course) Interview (III) Interview (III) Downow and purpose of the course) Interview (III) Interview (IIII) Downow and purpose of the course) Interview (IIII) Interview (IIII) Downow and purpose of the course) Interview (IIII) Interview (IIIII) Understand the basics of the electrical and electronic application measurement, optical measurement, the unit system, outlined of measurement data schellow of the measurement, the unit system, outlined of measurement data schellow of the serview of our course is any constaint and precessing - 37 Minas, And Fistematic and precesing - 37 Minas, And Fistematic and and electronic course										
Course number U-ENG26 26101 L172 Course number U-ENG26 26101 L172 Course number U-ENG26 26101 L172 Use in decomp If (AG 7/H)III mediation (AG A) Instruction (AG A) Target year Jayar industric daw Number of credits 2 Year/second fri.3 Class style Lecture Impair friand Downow and purpose of the course) Interview (III) Interview (III) Downow and purpose of the course) Interview (III) Interview (III) Downow and purpose of the course) Interview (III) Interview (IIII) Downow and purpose of the course) Interview (IIII) Interview (IIII) Downow and purpose of the course) Interview (IIII) Interview (IIIII) Understand the basics of the electrical and electronic application measurement, optical measurement, the unit system, outlined of measurement data schellow of the measurement, the unit system, outlined of measurement data schellow of the serview of our course is any constaint and precessing - 37 Minas, And Fistematic and precesing - 37 Minas, And Fistematic and and electronic course								+ = *		
Course think Discrete and End of the summary of this summary of the			LI ENCO	C 2 (101 T 172				木史新	-	雷등雷子計測(2)
intercome Rescription Rescription Rescription Interview Interview associate Process, OKAMOTO RYOU Target year associate Process, OKAMOTO RYOU Target year associate Process, OKAMOTO RYOU Target year associate Process, OKAMOTO RYOU Target year associate Process, OKAMOTO RYOU Target year associate Process, OKAMOTO RYOU Target year associate Process, OKAMOTO RYOU Target year associate Process, OKAMOTO RYOU Target year associate Process, OKAMOTO RYOU Target year associate Process, OKAMOTO RYOU Target year associate Process, OKAMOTO RYOU Target year associate Process, OKAMOTO RYOU Target year associate Process, OKAMOTO RYOU Target year associate Process, OKAMOTO RYOU Target year associate Process, OKAMOTO RYOU Target year associate Process, OKAMOTO RYOU Target year associate Process, OKAMOTO RYOU Target year associate Process, OKAMOTO RYOU Target year associate Process, OKAMOTO RYOU Target year associate Process, OKAMOTO R	Course nu	Imber	U-ENG20	5 26101 LJ/2					-	
Intercent of the second of the second server of the second second server of the second server of the second server of the sec										
English International relation of the international relation of the international relation of the international relational relationary relationary relational relationary relatingeneratingenergical relationarelating relationary rela							· Oraduate c			• •
Target year Myear states or stor. Number of credits 2 Year/semsters 2021/Scccond semset Days and parties Fri.3 Dass style Lecture Daparitation Japanese Deversive and purpose of the corport The basics of the measurement, relations will be explainted, Friist we describe the measurement, relation measurement of electrici). In addition, as electricial and electronic application measurement will be overviewed. Estudy outside of class (preparation and review) Course objectives] Winderstand the basics of the electricial and electronic measurement, the unit system, outlined of measurement standards and fraceability. Scc. Sch. Sch. Sch. Sch. Sch. Sch. Sch.		Electric	and Electron	nc Measurem				rofessor,OKAMOTO RYO	0	
Days and periods Find any off the course Inclusive Inclusive Days and periods Find any off the course Inclusive Inclusive Coverview and purpose of the courses Inclusive Inclusive Inclusive The basis of the measurement, of clearticity. In addition, as electrical and electronic application measurement will be overviewed. Inclusive Inclusive Inclusive (Borres objectives) Inclusive Inclusive Inclusive Inclusive Inclusive Standards and measurement standards and traceability. Inclusive of error and uncertainty, as well as the basic valuation method of measurement data, 2-3 times, The concept of error and uncertainty, as well as the basic valuation method of measurement data, 2-3 times, The concept of error and uncertainty, as well as the basic valuation method of measurement data, 2-3 times, The concept of error and uncertainty, as well as the basic valuation method of measurement data, 2-3 times, The concept of error and uncertainty, as well as the basic valuation method of the power factor and the like. In addition, measures for small voltage measurement and hoise, also method of the power factor and the like. In addition, measures for small voltage measurement, and noise, also method of learning achievement of learning achievements on flearning achievement of learning achievement of the results (preparation and electronic circuits, mechanics Evelowed count measurement, the confirmation of learning achievements. Inclusive and preparation and electroni circuits, mechanics	Lingilishi									
Days and purposes Letture puppedinticial Japanese (Overview and purpose of the course) The basis of the measurement of electricial and magnetic quantities will be explained. First we describe the general theory of the measurement will be overviewed. [Study outside of class (preparation and review)] (Course objectives) Understand the basis of the electricial and electronic measurements. [Other information (office hours, etc.)) Study and the describing of the measurement of the measurement and be electronic measurement and models as electricial and measurements. (Other information (office hours, etc.)) Study and the describing. Some topics may be skipped or swapeed according to the progress of the lecture. Weight and the objective of the measurement and be explained. First we describe the instruction type described by the progress of the clearue. (Other information (office hours, etc.)) Some topics may be skipped or swapeed according to the progress of the lecture. "Please visit KULASIS to find out about office hours. May and be coversion, and Fourier transform. Event on the dot of measurement of the fine system, outling of the progressing 2-3times, Amplification circuit using an operational amplifier (OA), DA and hoise, abs mentioned for measurement of the fine queue y domin, and hoise, abs mentioned for measurement of the fine system, optical measurements. Course requirements. Evention measurement of the fine system, optical measurements. Course requirements. Evectrin intrum	Target yea	r 2nd y	ear students or ab	ove Number	of credit	ts 2	Year/semester	s 2021/Second semeste	r	[References, etc.]
(Dverview and purpose of the course) The basis of the measurement of electricity. In addition, as electricial and electronic application measurement of the measurement, to explain the principles of the various measurement methods and measuring instrument on the amount of electricity. In addition, as electricial and electronic application measurement will be overviewed. (Course objectives) (Course schedule and contents) Stundards and traceability. Conternation of the measurement, the unit system, outlined of measurement and nace-2-> times. The concept of error and uncertainty, as well as the basic evaluation method of measurement data. 2-> times. The concept of error and uncertainty as of the electricitic alignatives: for fue addition, measurement data. 2-> times. The concept of error and uncertainty of the measurement data. 2-> times. The concept of error and uncertainty as well as the basic evaluation method of measurement data. 2-> times. The concept of error and uncertainty of the frequency domain. Applied electricitic alignatives: for the electricitic alignatives: for the electricitic alignatives: for the electricitic alignatives: for the rest. Confirmation of learning achievements. (Course requirements): Confirmation of learning achievements on electric and electronic circuits, mechanics (Course requirements): Confirmation of learning achievements on electric and electronic circuits, mechanics (Course req	Davs and perio	ods Fri.3	Cla	ass style	Lecture		Lanouace of instruc	ior Japanese	1	(Reference books)
The basics of the measurement of electrical and magnetic quantities will be explained. First we describe the measurement, be complexible of the measurement, be complexible of the measurement will be overviewed. [Study outside of class (preparation and review)] Review with handouts is desired. [Course objectives] Understand the basics of the electrical and electronic measurements. [Course objective] Standards and traceability/2times, The general theory of the measurement, the unit system, outlined of measurement dualds and traceability. Some topics may be skipped according to the progress of the lecture. *Please visit KULASIS to find out about office hours. *Please visit KULASIS to find out about office hours. *Please visit display the electrical quantities. *Please visit KULASIS to find out about office hours. *Please visit KULASIS to find out about office hours. *Please visit KULASIS to find out about office hours. *Please visit KULASIS to find out about office hours. *Please visit KULASIS to find out about office hours. *Please visit KULASIS to find out about office hours. *Please visit KULASIS to find out about office hours. *Please visit KULASIS to find out about office hours. *Please visit KULASIS to find out about office hours. *Course requirements. *Course requirements. *Course requirements. Colination of the power factor and the like. In addition, measures for small volage measurements. *Course requirements.								1	- 11	
general theory of the measurement, to explain the principles of the various measurement methods and measurement will be overviewed. [Course objectives] Understand the basics of the electrical and electronic measurements. [Course schedule and contents] Standards and traceability. Ztimes, The general theory of the measurement, the unit system, outlined of measurement data such as regression analysis Analogamplight signal processing. ² —Stimes, The concept of error and uncertainty, as well as the basic evaluation of the measurement data such as regression analysis Analogamplight signal processing. ² —Stimes, The concept of error and uncertainty, as well as the basic evaluation of the measurement data such as regression analysis Analogamplight signal processing. ² —Stimes, Amplification circuits using an operational amplification circuits using an operational amplification circuits using an operational distribution type electricial quantities. ⁵ (Ydimes, The most basic is to explain the principles of the instruction type electricial quantities. ⁶ For example, optical measurement, and noise, also mentioned for measurements. The measurements. Confirmation of the requery domain. Applied electronic ensurements, 12 times, For example, optical measurement, and electronic ensurements. The concept of the requery domain. Applied electrici electronic measurements. For example, optical measurements. Confirmation of feers at each lecture, and some reports will be taken into account for the total evaluation.	-		•	-	d magneti	c quantiti	es will be explaine	d. First we describe the	1 11	Istudy outside of class (preparation and review)]
Interstructure of the answerment, of the exclusion, as electrical and electronic apprication Impostruction Impostruction <td></td>										
(Course objectives) Understand the basics of the electrical and electronic measurements. (Course schedule and contents) Standards and traceability.2times, The general theory of the measurement, the unit system, outlined of measurement data.2~3 times, The concept of error and uncertainty, as well as the basic evaluation method of measurement data.2~3 times, The concept of error and uncertainty, as well as the basic evaluation, and Fourier transform. Analogamptigital signal processing.2~3 times, Amplification circuit using an operational amplifier (OA), DA and AD conversion, and Fourier transform. measurement tanknow, described volume, the electric alquantities of the measurement and the like. In addition, measures for small voltage measurement and has expression and projective measurements. (Course requirements) (Course requirements) (Course requirements) (Course requirements) (Evaluation methods and policy) The result of the final test, the results of tests at each lecture, and some reports will be taken into account for the total evaluation.						dition, as	electrical and elec	ronic application		Review with handouts is desired.
Understand the basics of the electrical and electronic measurements. (Course schedule and contents) Standards and traceability. Ztimes, The general theory of the measurement, the unit system, outlined of measurement data, 2~3 times, The concept of error and uncertainty, as well as the basic evaluation method of measurement data, 2~3 times, The most basic is to explain the principles of the instruction type electric instrument, described voltage, current, power, the electrical quantities of the measurement of the frequency domain. Applied electric electronic measurement, files, For example, optical mash resourcement of the frequency domain. Applied electronic measurements, 2 (Course requirements) Electromagnetism, electrical and electronic circuits, mechanics (Evaluation methods and policy) The results of tests at each lecture, and some reports will be taken into account for the total evaluation.		· 1		in will be ove						
[Course schedule and contents] Stundards and traceability. 2times, The general theory of the measurement, the unit system, outlined of measurement ata.2~3times, The concept of error and uncertainty, as well as the basic evaluation method of measurement data.2~3times, The concept of error and uncertainty, as well as the basic evaluation method of measurement data.2~3times, The most basic is to explain the principles of the instruction type electric instrument, described voltage, current, power, the electric all quantities, 5?6times, The most basic is to explain the principles of the instruction type electric instrument, described voltage, current, power, the electric all quantities, 5?6times, The most basic is to explain the principles of the instruction type electric instrument, described voltage, current, power, the electric all quantities, 5?6times, The most basic is to explain the principles of the measurement of the frequery domain. Applied electric electronic measurements, 1?2times, For example, optical measurement and electronic measurements, 1?2times, For example, optical measurements. [Course requirements] Electronamethods and policy] The result of the final test, the results of tests at each lecture, and some reports will be taken into account for the total evaluation.	-		-							Some topics may be skipped or swapped according to the progress of the lecture.
Standards and traceability.2times, The general theory of the measurement, the unit system, outlined of measurement standards and traceability. Error and evaluation of the measurement data, 2~3times, The concept of error and uncertainty, as well as the basic evaluation method of measurement data, such as regression analysis Analogampdigital signal processing, 2~3times, Amplification circuit using an operational amplifier (OA), DA and AD conversion, and Fourier transform. measurement technologies for electrical quantities, 5?6times, The most basic is to explain the principles of the instruction type electronic measurement, power, the electrical quantities of the measurement of the frequency domain. Applied electric electronic measurement, 1?2times, For example, optical measurements. Confirmation of learning achievement, 1?2times, For example, optical measurements on electric and electronic measurements. [Course requirements] Electronamethed and policy] The result of the final test, the results of tests at each lecture, and some reports will be taken into account for the total evaluation.	Understand	the basic	s of the elect	trical and elec	ctronic me	asuremen	its.			*Please visit KULASIS to find out about office hours.
measurement standards and traceability. Error and evaluation of the measurement data,2~3times,The concept of error and uncertainty, as well as the basic evaluation method of measurement data such as regression analysis Analogampdigital signal processing,2~3times,Amplification circuit using an operational amplifier (OA), DA and AD conversion, and Fourier transform. measurement technologies for electrical quantities,576times, The most basic is to explain the principles of the instruction type electric instrument, described voltage, current, power, the electrical quantities of the measurement method of the power factor and diditon, measures for small voltage measurement and noise, also mentioned for measurement, 12times,For example, optical measurements. Confirmation of learning achievement, 1time,Confirmation of learning achievements on electric and electronic measurements. [Course requirements] Electromagnetism, electrical and electronic circuits, mechanics [Evaluation methods and policy] The result of the final test, the results of tests at each lecture, and some reports will be taken into account for the total evaluation.	[Course s	chedul	e and conte	ents]					1 11	
Error and evaluation of the measurement data 2~3 times, The concept of error and uncertainty, as well as the basic evaluation method of measurement data such as regression analysis Analogampdigital signal processing.2~3 times, Amplification circuit using an operational amplifier (OA), DA and AD conversion, and Fourier transform. measurement technologies for electrical quantities.576 times, The most basic is to explain the principles of the instruction type electric instrument, described voltage, current, power, the electrical quantities of the measurement of the frequency domain. Applied electric electronic measurement, 12 times, For example, optical measurements. Confirmation of learning achievement, 11 time, Confirmation of elearning achievements, needen electric and electronic circuits, mechanics [Course requirements] Electromagnetism, electrical and electronic circuits, mechanics [Evaluation methods and policy] The result of the final test, the results of tests at each lecture, and some reports will be taken into account for the total evaluation.					theory of	the measu	rement, the unit sy	stem, outlined of		
basic evaluation method of measurement data such as regression analysis Analogampdigital signal processing.2~3times,Amplification circuit using an operational amplifier (OA), DA and AD conversion, and Fourier transform. measurement technologies for electrical quantities,S?6times,The most basic is to explain the principles of the instruction type electric instrument, described voltage, current, power, the electrical quantities of the measurement method of the power factor and the like. In addition, measures for small voltage measurement and noise, also mentioned for measurements of the frequency domain. Applied electric electronic measurements, 12/times,For example, optical measurements. Confirmation of learning achievement, 1time,Confirmation of learning achievements on electric and electronic measurements. [Course requirements] Electromagnetism, electrical and electronic circuits, mechanics [Evaluation methods and policy] The result of the final test, the results of tests at each lecture, and some reports will be taken into account for the total evaluation.										
Analogampdigital signal processing, 2~3times, Amplification circuit using an operational amplifier (OA), DA and AD conversion, and Fourier transform. measurement technologies for electrical quantities, 5?6times, The most basic is to explain the principles of the instruction type electric instrument, described voltage, current, power, the electrical quantities of the measurement method of the power factor and the like. In addition, measures for small voltage measurement and noise, also mentioned for measurement of the frequency domain. Applied electric electronic measurements, I?2times, For example, optical measurements. Confirmation of learning achievement, Itime, Confirmation of learning achievements on electric and electronic measurements. [Course requirements] Electromagnetism, electrical and electronic circuits, mechanics [Evaluation methods and policy] The result of the final test, the results of tests at each lecture, and some reports will be taken into account for the total evaluation.								certainty, as well as the		
and AD conversion, and Fourier transform. measurement technologies for electrical quantities, 576 times, The most basic is to explain the principles of the instruction type electric instrument, described voltage, current, power, the electrical quantities of the measurement method of the power factor and the like. In addition, measures for small voltage measurement and noise, also mentioned for measurements, 1?2 times, For example, optical measurements. Applied electric increasurement, 1?2 times, For example, optical measurements. Confirmation of learning achievement, 1 time, Confirmation of learning achievements on electric and electronic measurements. [Course requirements] Electromagnetism , electronic circuits, mechanics [Evaluation methods and policy] The result of the final test, the results of tests at each lecture, and some reports will be taken into account for the total evaluation.								ional amplifier (OA), DA		
instruction type electric instrument, described voltage, current, power, the electrical quantities of the measurement method of the power factor and the like. In addition, measures for small voltage measurement and noise, also mentioned for measurement of the frequency domain. Applied electric electronic measurements, 1?2times, For example, optical measurements. Confirmation of learning achievement, ltime, Confirmation of learning achievements on electric and electronic measurements. Electromagnetism, electrical and electronic circuits, mechanics [Course requirements] Electromagnetism, electrical and electronic circuits, mechanics [Evaluation methods and policy] The result of the final test, the results of tests at each lecture, and some reports will be taken into account for the total evaluation.	and AD con-	version,	and Fourier t	ransform.			• •			
measurement method of the power factor and the like. In addition, measures for small voltage measurement and noise, also mentioned for measurement of the frequency domain. Applied electric electronic measurements, 12times, For example, optical measurements. Confirmation of learning achievement, 1time, Confirmation of learning achievements on electric and electronic measurements. [Course requirements] Electromagnetism, electrical and electronic circuits, mechanics [Evaluation methods and policy] The result of the final test, the results of tests at each lecture, and some reports will be taken into account for the total evaluation.										
and noise, also mentioned for measurements of the frequency domain. Applied electric electronic measurements, 1?2times, For example, optical measurements. Confirmation of learning achievement, 1time, Confirmation of learning achievements on electric and electronic measurements. [Course requirements] Electromagnetism, electrical and electronic circuits, mechanics [Evaluation methods and policy] The result of the final test, the results of tests at each lecture, and some reports will be taken into account for the total evaluation.										
Applied electric electronic measurements, 1?2times, For example, optical measurements. Confirmation of learning achievement, 1 time, Confirmation of learning achievements on electric and electronic measurements. [Course requirements] Electromagnetism, electrical and electronic circuits, mechanics [Evaluation methods and policy] The result of the final test, the results of tests at each lecture, and some reports will be taken into account for the total evaluation.								n vonage measurement		
electronic measurements. [Course requirements] Electromagnetism, electrical and electronic circuits, mechanics [Evaluation methods and policy] The result of the final test, the results of tests at each lecture, and some reports will be taken into account for the total evaluation.								nts.		
[Course requirements] Electromagnetism, electrical and electronic circuits, mechanics [Evaluation methods and policy] The result of the final test, the results of tests at each lecture, and some reports will be taken into account for the total evaluation.				ment,1time,C	onfirmati	on of lear	ning achievements	on electric and		
Electromagnetism, electrical and electronic circuits, mechanics [Evaluation methods and policy] The result of the final test, the results of tests at each lecture, and some reports will be taken into account for the total evaluation.	electronic m	easurem	ents.							
[Evaluation methods and policy] The result of the final test, the results of tests at each lecture, and some reports will be taken into account for the total evaluation.	-		-							
The result of the final test, the results of tests at each lecture, and some reports will be taken into account for the total evaluation.	Electromagn	ietism, e	lectrical and	electronic cir	cuits, mec	chanics				
the total evaluation.	-									
			il test, the res	ults of tests a	t each lect	ture, and	some reports will b	e taken into account for		
Continue to 電気電子計測(2)↓↓↓	the total eva	luation.								
Continue to 電気電子計測(Z)↓↓↓										
Continue to 電気電子計測(2)↓↓↓										
Continue to 電気電子計測(之) ↓ ↓ ↓										
Continue to 電気電子計測(2)↓↓↓										
Continue to 電気電子計測(2)↓↓↓	L]	
							Continue t	o 電気電子計測(2)↓↓	4	
									_	L

	ber U-El	NG26 261	02 LE72						
	i気電子数学1 athematics for Elec		ectronic Eng	ineering 1	nan and	ructor's ne, job ti departn ffiliation	tle, nent	Professor,OO	e for Sustainable Humanospher OMURA YOSHIHARU hool of Engineering DI SHINJI
Farget year	2nd year student	ts or above N	lumber	of cred	lits	2	Yea	r/semesters	2021/Second semester
Days and period	s Fri.1	Class	style	Lecture	e			Language of instruction	English
Overview a	nd purpose	of the c	ourse]						
eigenfunctions	s, we also stud	y Fourier	series, Fo	ourier tra	ansfe	orm, an	d Lapl	ace transform	
				itial and	tem	iporal e	volutio	ons of various	physical phenomena.
[Course sch	nedule and c	ontents]						
Ordinary Diffe	erential Equati	ons (ODE	E) from Pl	DE by s	epar	ation of	varia	pes of 2nd or bles	PDE) : Laplace, der PDE.; derivation of
Ordinary Diffd Ordinary Diffd Ordinary Diffd Sturn-Liouvill Green#039s F Bessel Functio function, Bess spherical coor Legendre Funu Legendre Funu Fourier Series Fourier Transf function, Solu Laplace Trans Confirmatin o	erential Equati erential Equati tions. Singula e Theory, 1tim unction Metho ons,2times, MA el series; appli dinates, spheri tions, 1 time,L nomials. 1 time, Propert orm,2times,FC	ons (ODE ons,2time r points fc e,Self-ajo d,1time,C TLAB D ication to cal Besse egendre fi ies of Fou pourier inte equation a aplace tra aglace tra	E) from Pless, Series sor ODE; V int ODE; V int ODE; Green#039 emonstra frequency l function unctions; unctions; gral, Fou and diffus insform, i Che level	DE by se solutions Wronski Hermit Os functi tion (vib y modul s generat es, Gibbs rier tran tion equi nverse I	epar s by an; l ian c ion r oratii ation ing f s Ph sfor ation _apli	ation of Froben inear in operator nethod ng mem n. Hank functior enomer ms of C 1 ace tran	varia ius#03 ideped ; Sturr to solv brane el fun as; bou ion ausian sform	pes of 2nd or bles 9 method; tri ence of soluti n-Liouville th re nonhomogy EM wave ra ctions; 3D He indary value p n and derivati i, initial value	der PDE.; derivation of gonometric, Bessel, and ons; second solution
Ordinary Diffd Ordinary Diffd Ordinary Diffd Sturn-Liouvill Green#039s F Bessel Functio function, Bess spherical coor Legendre Fun Legendre Fun Legendre Fun Fourier Series Fourier Transf function, Solu Laplace Trans Confirmatin o	erential Equati erential Equati tions. Singulau e Theory, Itim unction Metho ns,2times,MA el series; appli dinates, spheri etions, Itime,L nomials. 1time,Propert form,2times,L f Understandir pugh questions	ons (ODE ons,2time r points fc e,Self-ajo d,1time,C TLAB D ication to cal Besse egendre fi ies of Fou pourier inte equation a aplace tra aglace tra	E) from Pless, Series sor ODE; V int ODE; V int ODE; Green#039 emonstra frequency l function unctions; unctions; gral, Fou and diffus insform, i Che level	DE by se solutions Wronski Hermit Os functi tion (vib y modul s generat es, Gibbs rier tran tion equi nverse I	epar s by an; l ian c ion r oratii ation ing f s Ph sfor ation _apli	ation of Froben inear in operator nethod ng mem n. Hank functior enomer ms of C 1 ace tran	varia ius#03 ideped ; Sturr to solv brane el fun as; bou ion ausian sform	pes of 2nd or bles 9 method; tri ence of soluti n-Liouville th re nonhomogy EM wave ra ctions; 3D He indary value p n and derivati i, initial value	der PDE.; derivation of gonometric, Bessel, and ons; second solution neory encous equations. diation), generating lmholtz equation in problems; associated ves, Dirac delta problems of ODE
Ordinary Diffe Ordinary Diffe Ordinary Diffe Sturn-Liouvill Green#039s F Bessel Functic function, Bess spherical coor Legendre Fun Legendre Fun Legendre Fun Legendre Fun Legendre Fun Legendre Fun Legendre Fun Legendre Fun Courier Transf function, Solu Laplace Trans Confirmed three Confirmed three Calculus, Vect	erential Equati erential Equati tions. Singula e Theory, I tim unction Metho ms, 2 times, MA el series; appli dinates, spheri tions, I time, L nomials. , I time, Propert orm, 2 times, Fc tions of wave form, 2 times, Fc tions of wave form, 2 times, Fc to understandir bugh questions uirements] tor Analysis, F	ons (ODE ons,2time r points fc e,Self-ajo d, 1time,C, TLAB D ication to cal Besse egendre ff ies of Fou burier inte equation a aplace tra aplace tra apl, 1time,T	E) from Pl ss,Series s or ODE; V int ODE; Tereen#039 emonstra frequency l function unctions; arier Series gral, Fou and diffus nsform, i Che level ussion.	DE by second to the second term of	epar s by an; l ian c ion r prati- ation ing f s Ph ssfor ation tapla rstar	ation of Froben inear in operator nethod ng merr n. Hank functior enomer ms of C 1 ace tran iding or	e varia ius#03 iudeped r; Sturn to solv ibrane el fun ius; bou ion iausian sform n all to	pes of 2nd or oles 9 method; tri ence of soluti n-Liouville tr e nonhomog, EM wave ra ttions; 3D He ndary value p a and derivati , initial value pics covered	der PDE.; derivation of gonometric, Bessel, and ons; second solution neory encous equations. diation), generating lmholtz equation in problems; associated ves, Dirac delta problems of ODE
Ordinary Diffi Ordinary Diffi Legendre func Sturn-Liouvill Green#039s F Bessel Functic function, Bess spherical coor Legendre Fun Legendre Fun Legen	erential Equati erential Equati tions. Singula e Theory, I tim unction Metho ms, 2 times, MA el series; appli dinates, spheri tions, I time, L nomials. , I time, Propert orm, 2 times, Fc tions of wave form, 2 times, Fc tions of wave form, 2 times, Fc to understandir bugh questions uirements] tor Analysis, F	ons (ODE ons, 2time r points fc e, Self-ajo dd, 1time, C TTLAB D ication to cal Besse egendre fri ies of Fou ourier inte equation a aplace tra aplace tra aplace tra discu	E) from PI s,Series s or ODE; V int ODE; V emonstra frequency f	DE by second to the second term of	epar s by an; l ian c ion r prati- ation ing f s Ph ssfor ation tapla rstar	ation of Froben inear in operator nethod ng merr n. Hank functior enomer ms of C 1 ace tran iding or	e varia ius#03 iudeped r; Sturn to solv ibrane el fun ius; bou ion iausian sform n all to	pes of 2nd or oles 9 method; tri ence of soluti n-Liouville tr e nonhomog, EM wave ra ttions; 3D He ndary value p a and derivati , initial value pics covered	der PDE.; derivation of gonometric, Bessel, and ons; second solution heory encous equations. diation), generating Imholtz equation in problems; associated ves, Dirac delta problems of ODE by this lecture will be
Ordinary Diffe Ordinary Diffe Ordinary Diffe Sturn-Liouvill Green#039s F Bessel Functic function, Bess spherical coor Legendre Func Legendre Func Legendre Func Legendre Fourier Transf function, Solu Laplace Trans function, Solu Laplace Transf Confirmatin o confirmatin o confirmatin kon Confirmatin kon Confirmatin kon Confirmatin kon Calculus, Veci Special Englis [Evaluation The grade will	erential Equati erential Equati tions. Singula e Theory, I tim unction Metho ns,2times,MA el series; appli dinates, spheri tions, I time,L nomials. I time, Propert tions of wave form,2times,Fc tions of wave form,2times,F tions of wave form,2times,F to Analysis, F h methods an t be given by a	ons (ODE ons, 2time r, points fr, e, Self-ajo d, Itime, C, TLAB D ication to cal Besse egendre fi ies of Fou ourier inte equation a aplace tra apl, Itime, I and discu	E) from PI s., Series s or ODE; V int ODE; V int ODE; Green#039 emonstra frequenc; I function unctions; arier Serie gral, Fou and diffus insform, i Che level ussion.	DE by se solutions Wronski Hermit Ds functi tion (vili y modul is generat es, Gibbs rier tran nverse I of under	epar s by an; 1 ian c ion r oratin ation ing 1 s Ph ssfor ation Lapli rstar	ation of Froben inear in pperatori method ng menthod ng menthod ng menthod ng menthod ng menthod ng method ng method	Evariai ius#03 ius#03 Sturr to solv brane el fun- ias; bou ion iausian sform a all to aglish 3time	pes of 2nd or oles 9 method; tri ence of soluti m-Liouville th e nonhomogy, EM wave ra etions; 3D He ndary value p n and derivati , initial value pics covered	der PDE.; derivation of gonometric, Bessel, and ons; second solution neory encous equations. diation), generating Imholtz equation in problems; associated ves, Dirac delta problems of ODE by this lecture will be

電気電子数学1(2)

grade is given as 100.

[Textbooks] Mathematical Methods for Physicists: A Comprehensive Guide, Seventh Edition, Arfken, Weber, and Harris isbn{} {9780123846549} (Kindle version is available.)

[References, etc.] (Reference books)

[Study outside of class (preparation and review)]

(Other information (office hours, etc.))

Lectures are given mostly in English.

Days and periods Wed.3 Class style Lecture Impage distant [Overview and purpose of the course] Transformation and approximation of data (signals) are basic tasks of any science or technology. Also, conceptions of linear space and linear mapping are the basis of not only such signal processing but of a number of engineering theories. Thus, this course discusses mainly signal theory and function approximation problems, explaining linear algebraic and functional analytic concepts and their engineering, specifically the concepts of linear space, functional analysis, and signal theory. Through this course, students not only learn the foundations of numerous subjects such as basic communications theory, control engineering, and signal/image processing, they also gain an expanded perspective from which they can look out on a number of different subjects. [Course objectives] Learn the mathematical techniques needed for electrical and electronic engineering, specifically the concepts of linear space, functional analysis, and signal theory. [Course objectives] Learn the mathematical techniques needed for electrical and electronic engineering, specifically the concepts of linear space, functional analysis, and signal theory. [Course schedule and contents] Linear space and linear mapping. 3-4 classes: Review linear algebra, explaining not only linear space in terms of matrix calculation but also describing the concepts of linear space and linear mapping. Describe expression on the basis of data (vectors) and its relation to eigenvalue problems, as well as the relationship between eigenvalue problems, on the on hand, and variation problems (minimax problems) and least sq
Days and periods Class style Lecture Language distution Japanese
Transformation and approximation of data (signals) are basic tasks of any science or technology. Also, conceptions of linear space and linear mapping are the basis of not only such signal processing but of a number of engineering theories. Thus, this course discusses mainly signal theory and function approximation problems, explaining linear algebraic and functional analytic concepts and their engineering, specifically the concepts of linear space, functional analysis, and signal theory. Through this course, students not only learn the foundations of numerous subjects such as basic communications theory, control engineering, specifically the concepts of linear space, functional analysis, and signal theory. Through this course, students not only learn the foundations of numerous subjects such as basic communications theory, control engineering, and signal/ image processing, they also gain an expanded perspective from which they can look out on a number of different subjects. [Course objectives] Learn the mathematical techniques needed for electrical and electronic engineering, specifically the concepts of linear space, functional analysis, and signal theory. [Course schedule and contents] Linear space and linear mapping, 3-4 classes: Review linear algebra, explaining not only linear space in terms of matrix calculation but also describing the concepts of linear space and linear mapping. Describe expression on the basis of data (vectors) and its relation to eigenvalue problems, as well as the relationship between eigenvalue problems on the other, and explain the importance of linear algebraic concepts. Abstract space/signal space, 2-4 classes: Explain not only finite dimensional vectors, but also functional
of linear space, functional analysis, and signal theory. [Course schedule and contents]
Linear space and linear mapping, 3-4 classes: Review linear algebra, explaining not only linear space in terms of matrix calculation but also describing the concepts of linear space and linear mapping. Describe expression on the basis of data (vectors) and its relation to eigenvalue problems, as well as the relationship between eigenvalue problems, on the one hand, and variation problems (minimax problems) and least squares approximation problems on the other, and explain the importance of linear algebraic concepts. Abstract space/signal space, 2-4 classes: Explain not only finite dimensional vectors, but also functional
describe convergence, Cauchy sequences, and completeness within them. Also, introduce norms in linear space, norm spaces, and describe the properties of these spaces. Introduce examples of functional spaces, and describe convergence and completeness. Also, describe mapping (operators), projection, orthogonality, and orthogonalization in functional spaces, and describe convergence and completeness. Also, describe mapping (operators), From abstract space to continuous/discrete signals, 2-3 classes: Introduce specific function systems as the bases of functional spaces. Explain the functional systems used frequently in analog and digital signal processing such as trigonometric functional systems and Haar functional systems. Also, describe how the polynomial systems of Legendre, Laguerre, and Hermite seen in Electrical and Electronic Mathematics 1 and Quantum Mechanics are produced by the orthogonalization of functions. Continuous/discrete signal transformation (basic), 2-3 classes: Discuss function expansion in terms of system and signal notation methods. Explain general Fourier series as an expansion upon trigonometric functional systems and discrete signals to least squares approximation problems. Continuous/discrete signal transformation (applied), 2-4 classes: Explain the various application methods.

and department of affiliation

数学2(2)

stem engineering and signal processing. Describe the discrete Fourier transform, wavelet expansion, nite element method in terms of the functional expansion by non-orthogonal (and a finite number

ion of learning attainment, 1 class: Confirm the degree of learning attained with respect to the ects

requirements] ebra, calcul

ion methods and policy] nination + report assignment

oks]

ces, etc.] ence books)

r 『Principles of Applied Mathematics』(Westview Press)(Japanase translation: キーナー応 二下, 日本評論社)

utside of class (preparation and review)]

ndouts and example solutions of problems provided in the class.

nformation (office hours, etc.)) sit KULASIS to find out about office hours.

(2)

explained, as well as the Josephson effect. Explained also is magnetic flux quantization within type II (high field) superconductors.

(6) Feedback lesson (1 class)

Confirmation of learned content is made based on evaluations of short tests and the score on the final examination, etc.

[Course requirements]

Those who would like to attend in this class are recommended to study electrodynamics, statistical physics, nd introduction to the solid state devices in advance. The lecture is, however, given in Japanese.

[Evaluation methods and policy]

Basically, an examination is imposed after the last class. A report may be imposed in case of necessity

[Textbooks]

C. Kittel 『Introduction to Solid State Physics, 8th ed.』 (Wiley) ISBN:0471680575

[References, etc.]

(Reference books) (Reference books) 田沼静一『電子伝導の物理』(裳華房)ISBN:4785329149 Ashcroft-Mermin 『Solid State Physics』ISBN:0030839939 鈴木実 『固体物性と電気伝導』(森北出版)ISBN:9784627156012 矢口裕之 『初歩から学ぶ固体物理学(KS物理専門書)』ISBN:4563024082

(Related URLs)

(Students will be notified of this within class as soon as it is made available, as intended.)

[Study outside of class (preparation and review)] reparing before classes and reviewing after classes are recommended

(Other information (office hours, etc.))

Please visit KULASIS to find out about office hours

(5) Superconductivity (3 classes)

especially scattering, is also explained.

Target year Days and periods Wed.2

[Course objectives]

[Course schedule and contents]

(1) Fundamentals of quantum mecha

(2) Free-electron Fermi gas (3 classes)

title in

English)

[Overview and purpose of the course]

Electrical Conduction in Condensed Matte

4th year students or above Number of credits 2

Lecture

A fundamental aspect of the electrical conduction in solids is discoursed in terms of physics based on the classical dynamics and later on the quantum physics. An important concept of the phonon and the electron

phonon is discoursed, which play a very important role in the electrical conduction in solids. The electrical conductivity is discoursed with a frequency from 0, that is dc, to optical frequency, by which a unified understanding of electrical conduction and the optical property is intended.

This class in intended to bestow the understanding of the solid state physics of a level dealt in the celebrated textbook by Ashcroft and Mermin. It is also intended for those attending in this class to acquire an ability sufficient to strive through such a textbook by himself or herself after the class is completed.

A simple review is made of quantum mechanics, and explication is made of electron states (energy, spatial

Explanation is made of the free-electron model as an ideal Fermi gas. Then, an overall explanation is provided of conductivity in metals, electronic specific heat, and the Hall effect.

conductivity and the band structures of conductors, semiconductors, and insulators.

(4) Electron-phonon interactions, and conductivity in metals and semiconductors (4 classes)

(3) Energy bands (2 classes) The band structure of electron energy within a solid crystal is introduced, and explanation is provided of

nics, and the hydrogen atom model (2 classes)

Class style

listribution, etc.) within hydrogen and atoms other than hydrogen.

(3) Superconductivity (3) classes) With respect to superconductive phenomena, explanation is made, using the London equation, of the Meissner effect, etc. Overview explanation is made of the Ginzburg-Landau theory, and order parameters are ntroduced. The relationship between phase and vector potential, important for superconductivity, is Continue to 電気伝導(2)↓↓↓

Lattice vibration is explained via quantized phonons (Bose particles) and Bose statistics, and lattice specific heat is introduced via determination of phonon density of state. Phonon scattering and electron scattering are explained. On this basis, explanation is then provided regarding the heat dependent nature of resistivity in etals, as well as of the Bloch-Gr#252neisen law at low temperature. Conductivity in semiconductors,

Graduate School of Engineering Associate Professor, KAKEYA ITSUHIRO

Japanese

Year/semesters 2021/First semester

Language of instructio

									未更新	-				
Course nu	Imber	U-ENG26 3	36105 LJ72	_							Cour	se numl	ber	U-ENG
Course title (and course title in English)	電気機器基 Electric Ma	基礎論 achinerys Fu	undamentals	na s ar	structor's ime, job t id departi affiliation	itle, ment			f Energy Science YASUYUKI		Course (and co title in English	urse 応 Ap		気機器 Electric !
Target yea	r 3rd year :	students or above	Number	of credits	2	Yea	r/semesters	2021	/First semester	1	Target	year	Brd ye	ear students o
Days and peri	ods Mon.4	Clas	s style	Lecture			Language of instruction	Japai	nese		Days and	d periods	Mon.	5
[Overview	and purp	ose of the	course]								[Over	view ar	nd pu	irpose o
	induction r	otating mac							characteristics of tating machine		industri machin	al appli es and r	cation e-gene	ain princi s. Especia eration mo /ehicle an
Master the f	undamental	s of various	types of ele	ectric mach	inery						[Cour	se obje	ective	es]
-		nd conten	-											ntals of d
							rsion and elect							and driv evelopme
									equivalent circuit	:	iecent t	renus or	i ille u	evelophie
of various ty					C 1		1. 6 1		-		[Cour	se sch	edule	and co
general theo analysis	ry of rotatir	ng mahine, li	time,genera	l expressio	n of elec	tric ma	achinery for d	ynam	ic performance					wer and f
Evaluation of	of achievem	ent,1time,E	xercise											utput pow Also, cor
[Course re	quiremer	nts]									explain	ed.		
Electric Circ	uits, Electr	omagnetic T	Theory 1											nd kinetic achinerie
[Evaluatio	n method	s and poli	cy]								for the	aid of ea	asier u	inderstand
mini-exercis	es in class a	and regular of	exam											speed con l control c
[Textbook	s]										respect	ive rotat	ing m	achines, r
quotElectric {427421677		quot,Ohm U	Jniversity T	ext Series,	Ed. Yas	uyuki S	Shirai, Ohm-s	ya (in	Japanese) isbn{	}	Power of variable	conversi e speed (ion foi contro	r, basic co r drive of ol is expla
[Referenc	es, etc.]													tating ma
	nce books										Trends	of new	electri	c machin
Electric mac 4627720106		2) Ed. Saku	itaro Nonak	a, Morikita	Syuppa	n (in Ja	apanese) ISBN	N 462	7720106 isbn{}{					linear mo
		(2) Ed. Taka	ao Okada, C	Dhm-Sya (i	n Japane	se) ISI	BN 42741289	70 isb	n{}{			ion is ex rv.1tim		ed. classes ar
4274128970	/											57	<i></i>	
[Study ou	tside of cl	ass (prepa	aration an	d review)]									
										- 1				
	formation	(office ho	urs, etc.))											
			urs, etc.))											

		未更新										未更新
			С	ourse num	nber U-E	ENG26 36	5106 LJ72					
or's Ib title, artment tion	Graduate Sch Professor,SH	oool of Energy Science IRAI YASUYUKI	(an title		5用電気機器 pplied Electri		nery	r	nstructor's name, job tit and departm of affiliation	nent Prog		ool of Engineering fessor,NAKAMURA TAKETSU?
Yea	ar/semesters	2021/First semester	Tar	get year	3rd year studer	nts or above	Number	of credit	t s 2	Year/se	emesters	2021/Second semeste
	Language of instruction	Japanese	Day	s and periods	s Mon.5	Class	style	Lecture		Lar	nguage of instruction	Japanese
		and characteristics of	[0	verview a	nd purpose	of the	course]					
nachine a	and direct curre	ent rotating machine	indu mac	ustrial appl chines and	ications. Espe	ecially, de method.	etailed exp Recent tre	planation v ends for th	will be mad ie developr	de for vari ments of t	iable speed	ds of our living and control of the rotating machineries such as
			[C	ourse obj	ectives]							
ry of ele		tric machinery energy conversion tion, equivalent circuit	vari	iable speed		lrive-con						ell as concept of ind basic concepts on
	-	ynamic performance	[C	ourse sch	nedule and	content	s]					
´asuyuki	Shirai, Ohm-s <u>y</u>	ya (in Japanese) isbn{}	exp load etc for Prir for resp are Pow vari Per	lained. d characteri . of the rota the aid of e nciple of va the variable pective rota explained. ver convers iable speed manent ma	istics and kind ating machine easier underst riable speed o e speed contrr ting machine Further, basid sion for drive control is exy gnet rotating	etic chara eries are e anding. control o: ol of the r s, methoo c concept of rotatir plained. machines	rotating m rotating m d of coord and funda s,1time,Pe	1-2times,I Examples machineries achineries inate trans amental pr es,1-2time rmanent n	Discuss the of visulali es,6-8times is discuss form for the rinciple of es,Power con nagnet rora	e load cha ized simu s,Based u ed. And the express the variab onversion ating macl	pon concre hen, fundar sion of dyn ble speed co method fo hine, which	a are also to be , kinetic characteristic tts may also be shown te examples, necessit mental equations of amic characteristics pontrol is described. r the realization of a is one of the most
pan (in J	lapanese) ISBN	4627720106 isbn{}{	Tre	nds of new	is explained electric mach nobile, linear	hineries, l	time,Tren	ds of deve	elopments	of new ro	tating mac	hineries, e.g., electric
nese) IS	BN 427412897	70 isbn{} {	gen	eration is e	explained.							g to their score.

5.用電気機器(2)	Course number U-ENG26 36109 LJ72
[Course requirements] Electric Circuits, Electromagnetic Theory, Power Electronics, Control Theory	Course title (and course title in Radio Engineering and department Research Institute for Sustainable Humanosph Research Institute for Sustainable Humanosph Research Institute for Sustainable Humanosph
Evaluation methods and policy]	English) of affiliation Professor,HASHIGUCHI HIROYU
evaluated by means of the examination. Imposed drills at the lecture and reports may also be considered for he evaluation.	Target year Brd year students or above Number of credits 2 Year/semesters 2021/Second semest
Textbooks]	Days and periods Mon.3 Class style Lecture Language distinction Japanese
okai Kim, quotModern electric machineryquot Denki-gakkai isbn{} {9784886862808}	[Overview and purpose of the course] In this class we study basics of the radio wave and antennas. We first examine the nature of the electromagnetic wave based on the wave equation derived from the Maxwell's equations. We discuss the
[References, etc.]	relation between the source current distribution and the radiated wave field in terms of various antenna
(Reference books) Fakao Okada et al., quotElectric machinery (2)quot(second edition) Ohmsha isbn{} {4274130088}, Sakutarou Nonaka, quotElectric machinery (1), (2)quot Morikita-shuppan isbn{} {4627720106}	parameters. We further study the wave propagation, such as refraction, reflection, scattering, and diffraction We also derive the basics of guided wave transmission from the boundary conditions of the Maxwell's equations.
[Study outside of class (preparation and review)]	[Course objectives]
[] (hh	Understand the basic theory of the radio wave, and technology for its industrial applications.
	[Course schedule and contents]
(Other information (office hours, etc.))	Nature of the radio wave,2-3times,We solve the Maxwell's equation in its simplest form to show that it give: the electromagnetic wave propagating in space. Basic nature of planar wave is examined including its
*Please visit KULASIS to find out about office hours.	reflection, transmission, velocity and polarization. Radiation and basics of antennas,4-5times,We derive the radiation field from the Maxwell's equation with sources, and study its characteristics in the near and far fields. We examine the radiation from short dipole and linear antennas in terms of important parameters such as the gain, impedance, frequency characteristics, and effective area. We also study principle, structure, and basic analysis methods of various realistic antenna such as array and aperture antennas. Radio wave propagation,2-3times,We study basic issues related to various types of the radio wave propagation including the ground wave, tropospheric and ionospheric propagation, and space communicatio We also discuss diffraction and scattering of the radio waves. Guided wave transmission,4-5times, We first study basic ideas related to the guided wave transmission, such as the transmission line theory and the Smith chart. We then study individual elements including coaxial line microstrip line, rectangular waveguide, and circular waveguide, mainly focusing on their propagation mode: transmission characteristics, and loss. The order of instruction for each topic and subtopic may vary, and the course instructors will organize the lectures as appropriate for the students. Students will be informed of the lecture plan (for all 15 lectures) in advance and will have sufficient time for preparation.
	Continue to 電波工学(2)↓↓↓

電波工学(2)	大更新 Course number U-ENG26 46110 LJ72
	Course title Instructor's Research Institute for Sustainable Humanov
Course requirements]	(and course アンテナ・伝搬工学 name, job title, Professor, YAMAMOTO MAMO
nowledge of Electromagnetic theory 2 is required. Modulation Theory in Electrical Communication is commended.	title in English) Antenna and Propagation Engineering and department of affiliation Research Institute for Sustainable Humanos Professor,HASHIGUCHI HIROY
Evaluation methods and policy]	
ading is based on the regular examination, but the rating of reports may be considered as well.	Target year 4th year students or above Number of credits 2 Year/semesters 2021/First semesters
extbooks]	Days and periods Thu.2 Class style Lecture Language d'instruction Japanese
usebe Nozomu [Denpa kogaku (radio engineering); 2nd Ed. (in Japanese)] (Corona publishing) ISBN:	[Overview and purpose of the course]
8-4-339-00773-2	In this course, students learn about various types of electromagnetic field analysis techniques and antenna
	pattern synthesis theory used in characteristic analysis and design of antenna. Then, an overview of radio application technologies (radio-wave propagation, different types of radar, etc.) is presented, as well as a
teferences, etc.]	at the current situation regarding these technologies.
(Reference books)	[Course objectives]
lanis "Antenna theory, 2nd Ed., (Wiley) ISBN:0471592684	Based on a knowledge of radio engineering, students will gain a higher level of understanding of
	electromagnetic-wave concepts and of specific technologies in which electromagnetic waves are used.
tudy outside of class (preparation and review)] student should read text book before/after class.	[Course schedule and contents]
	Pattern synthesis for array antenna (2-3 classes) Students learn the fundamentals of optimal pattern synthesis theory used to improve array antenna gain an
Other information (office hours, etc.))	suppress sidelobes. Taken up especially are Dolph-Thebysheff and Taylor methods. Students also learn ab
ease visit KULASIS to find out about office hours.	adaptive array technology.
	Fundamentals of electromagnetic field analysis (3-4 classes) Explained are the principles and characteristics of various methods used to determine electromagnetic field
	radiating from antennas and dynamic impedance, including the finite element method (FEM), electromoti
	force method, method of moments, physical optics method, finite-difference time-domain (FDTD) metho etc.
	Radio wave propagation (2-3 classes) Explained are fading in wireless communications, propagation in outer space communications, remote
	sensing applications, etc.
	Radar technology (2-3 classes)
	Explanation is made of principles of measuring distance and speed using radar, and of element technolog including pulse compression method, etc. Discussion also covers the principles and signal processing
	methods of example applications of radar technologies, including meteorological radar, atmospheric rada
	and synthetic aperture radar.
	Radio navigation (1-2 classes)
	Explanation is made of the principles of technologies for measuring the positions/locations of ships and aircraft, etc., by using radio waves. Discussion also covers an overview and applications of radio navigati
	methods, as represented by the global positioning system (GPS).
⁷ ンテナ・伝搬工学(2)	
ンテナ・伝服工子(2)	Course number U-ENG26 36111 LJ72
onfirmation of extent of student learning (1 class)	Course title Instructor's Graduate School of Informatics
onfirmation (evaluation) is made of the extent that students have learned the contents of this course.	(and course) 組み込み計算機システム title in Embedded Computer Systems and department Graduate School of Informatics
ourse requirements]	English) of affiliation Associate Professor, AWANO HIROM
dents are required to be taking or to have taken a course in radio engineering.	Target year Bird year students or above Number of credits 2 Year/semesters 2021/Second sem
	Target year Brd year students or above Number of credits 2 Year/semesters 2021/Second semesters
valuation methods and policy] Grading method	Days and periods Wed.1 Class style Lecture Language distinction Japanese
Scores on regular tests (80%) Student performance in classes (20%)	[Overview and purpose of the course]
ading standards	This lecture covers basics of embedded systems. Processor architectures, memory subsystems, I/O system and overall system architectures in embedded systems will be explained.
The following grades are given in accordance with the goal-achievement levels of each individual student:	
A+: Course goals have been accomplished at an extremely high level, from all perspectives. A: Course goals have been accomplished at a high level, from all perspectives.	[Course objectives]
B: Course goals have been accomplished, from all perspectives.	To understand basic structures of embedded computer systems. To understand impacts of architectural de choices on performance and energy consumption of embedded systems.
C: Confirmation can be made, from a majority of perspectives, of effects of student learning, and course	
als have been accomplished to a certain extent.	[Course schedule and contents] Basic properties of computer systems (1 week): History of embedded computer systems.
D: While course goals have been accomplished to a certain extent, further effort by the student is	Cache memory (3 weeks): Cache architectures, data transfer between main memory and cache.
D: While course goals have been accomplished to a certain extent, further effort by the student is sirable.	
D: While course goals have been accomplished to a certain extent, further effort by the student is sirable. F: No confirmation can be made of effects of student learning, and it is difficult to say that a student has	
D: While course goals have been accomplished to a certain extent, further effort by the student is sirable. F: No confirmation can be made of effects of student learning, and it is difficult to say that a student has complished the goals of this class.	optimization. Main memory virtualization (2 weeks): Effective use of main memory and secondary memory, memory
D: While course goals have been accomplished to a certain extent, further effort by the student is sirable. F: No confirmation can be made of effects of student learning, and it is difficult to say that a student has complished the goals of this class.	optimization. Main memory virtualization (2 weeks): Effective use of main memory and secondary memory, memory virtulization, and address conversion.
D: While course goals have been accomplished to a certain extent, further effort by the student is sirable. F: No confirmation can be made of effects of student learning, and it is difficult to say that a student has complished the goals of this class. extbooks]	optimization. Main memory virtualization (2 weeks): Effective use of main memory and secondary memory, memory virtulization, and address conversion. Operating system and interrupt (2 weeks): The concept of interrupt, interrupt handling, and necessary hardware supports for the interrupt will be explained. Relation between operating systems and the interrupt
D: While course goals have been accomplished to a certain extent, further effort by the student is irrable. F: No confirmation can be made of effects of student learning, and it is difficult to say that a student has omplished the goals of this class. extbooks] 今部 『電波工学』(コロナ社)ISBN:4339007730	optimization. Main memory virtualization (2 weeks): Effective use of main memory and secondary memory, memory virtulization, and address conversion. Operating system and interrupt (2 weeks): The concept of interrupt, interrupt handling, and necessary hardware supports for the interrupt will be explained. Relation between operating systems and the interru and time overhead for the interrupt will be explained.
D: While course goals have been accomplished to a certain extent, further effort by the student is estrable. F: No confirmation can be made of effects of student learning, and it is difficult to say that a student has complished the goals of this class. Textbooks]	optimization. Main memory virtualization (2 weeks): Effective use of main memory and secondary memory, memory virtulization, and address conversion. Operating system and interrupt (2 weeks): The concept of interrupt, interrupt handling, and necessary hardware supports for the interrupt will be explained. Relation between operating systems and the interrupt and time overhead for the interrupt will be explained. Instruction pipeline (2 weeks): The concept of instruction pipelining, necessary mechanisms for the pipelining, and characteristics of RISC processors.
esirable.	Main memory virtualization (2 weeks): Effective use of main memory and secondary memory, memory virtulization, and address conversion. Operating system and interrupt (2 weeks): The concept of interrupt, interrupt handling, and necessary hardware supports for the interrupt will be explained. Relation between operating systems and the interrup and time overhead for the interrupt will be explained. Instruction pipeline (2 weeks): The concept of instruction pipelining, necessary mechanisms for the

(Reference books) 新井 『新アンテナ工学』(総合電子出版社)ISBN:4915449807 山口他 『電気電子計測』(オーム社)ISBN:4274128733 前田・木村 『現代電磁波動論』(オーム社)ISBN:4274128024 高野他 『宇宙における電波計測と電波航法』(コロナ社)ISBN:4339012211

[Study outside of class (preparation and review)]

Students should prepare and review the contents as instructed during each class period.

(Other information (office hours, etc.))

No specific office hours have been set. When you want to talk directly, please first contact us by e-mail of your intention to either of the following e-mail addresses.

Prof. Yamamoto (yamamoto@rish.kyoto-u.ac.jp) Prof. Hashiguchi (hasiguti@rish.kyoto-u.ac.jp)

*Please visit KULASIS to find out about office hours.

processors. Review (1 week): The review of understanding on this lecture.

ogic circuits (60120), computer architecture basics (60160)

The level of achievement toward the goal of this lecture will be examined by the end-of-term exam.

[Course requirements]

[Evaluation methods and policy]

[Textbooks]	
	Ily follow "Computer Organization and Design: The Hardware/Software Interface" by sy. Having an access to a copy is strongly recommended.
[References, etc	1
(Reference bo David Patterson and	ks) John Hennessy 『Computer Organization and Design: The Hardware/Software Interface』
	class (preparation and review)]
Homework will be a textbooks.	ssigned. Deepen understanding through solving the homework and through reading
(Other informat	on (office hours, etc.))

		Course title (and course title in Basics of Biomedical Engineering English) Course 社体工学の基礎 Instructor's name, job title, and department of affiliation of Engineering English) Professor,KOBAYASHI TETSU Graduate School of Engineering Professor,COI SHINJI									
Target yea											
Days and per	iods T	ue.1	Class	s style	Lectur	e			Language of instruction	Japanese	
[Overview	w and	l purpos	e of the	course]							
The course brain funct		des basic l	knowledg	e of life s	ystem, el	ectro	physiol	logy, b	iomedical eng	gineering and huma	
[Course	objec	tives]									
		sic knowl	edge of o	n life syst	em, elect	roph	ysiolog	y, bior	nedical engin	eering and human	
brain funct											
[Course I None [Evaluati Rating is ba some repor	on me	ethods a	ind polic		ion by th	e exa	minatic	on held	at the end of	the semester as wel	
[Textboo	ks]										
Not used											
[Referen		-									
(Refere Handouts a			class or up	oloaded or	1 a webpa	age o	f KUL/	ASIS.			
[Study or					nd revie	w)]					
Review has											
(Other in *Please vis											

[Course requirements] Logic circuits, Computer engineering, Digital circuits, Embedded computer system

The level of achievement toward the goal of this lecture will be examined by the results of reports. All reports are mandatory.

(Reference books) Waste and Harris 『CMOS VLSI Design: A Circuits and Systems Perspective』 (Addison Wesley) ISBN: 978-0321547743

All reports are mandatory. Practices provided in the lecture should be solved after the lecture.

集積回路工学(2)

[Textbooks] Hand-outs will be provided.

[References, etc.]

[Evaluation methods and policy]

[Study outside of class (preparation and review)]

(Other information (office hours, etc.)) *Please visit KULASIS to find out about office hours.

Course nu	mber	U-EN	G26 46113	3 LJ11	U-ENG	26 46113	3 LJ72				
Course title (and course title in English)		间路工学 graged Circuits Engineering					s title, tment n	Graduate School of Informatics Professor,SATOU TAKASHI Graduate School of Informatics Professor,HASHIMOTO MASAN Graduate School of Informatics Associate Professor,AWANO HIROM			
Target year	r 4th y	ear students	or above Nu	mber	of credit	s 2	Yea	r/semesters	2021/First semester		
Days and perio	ds Thu.4	4	Class st	yle	Lecture			Language of instruction	Japanese		
[Overview	and pu	Irpose d	of the cou	urse]							
- This lecture	explains	design n	nethodolog	gies for	CMOS L	SI circui	ts. Both	analog and d	igital circuits will be		
covered.		U		·				C	0		
[Course of	-	-									
From this lee	cture, yo	u can une	derstand de	esign fl	ow of CM	IOS LSI	circuits				
[Course so	shodul	and as	ntonte ¹								
-			-		4 1	4 12	6.4		11 1 1 1		
Following to	DICS WIL					standing	of the	students and a	dding explanations and		
									5 1		
tasks when n									5 1		
	ecessary	, we will	l spend the	numbe					5 1		
tasks when n (1) CMOS pi Overview of	rocess ary	y, we will nd device process t	l spend the es [2 weeks echnology	numbe s] related	er of week	s listed i	n []. ign wil	l be explained	. Structures,		
tasks when n (1) CMOS pr Overview of characteristic	rocess ary CMOS	y, we will nd device process t	l spend the es [2 weeks echnology	numbe s] related	er of week	s listed i	n []. ign wil	l be explained	-		
tasks when n (1) CMOS pi Overview of	rocess ary CMOS	y, we will nd device process t	l spend the es [2 weeks echnology	numbe s] related	er of week	s listed i	n []. ign wil	l be explained	. Structures,		
tasks when n (1) CMOS pr Overview of characteristic also explaine	rocess ary CMOS cs and m ed.	y, we will nd device process t odeling 1	l spend the es [2 weeks echnology methods fo	numbe s] related	er of week	s listed i	n []. ign wil	l be explained	. Structures,		
tasks when n (1) CMOS pr Overview of characteristic also explaine (2) Analog c	rocess ary CMOS cs and m ed. ircuit de	y, we will nd device process t iodeling i sign [2 w	l spend the es [2 weeks echnology methods fo veeks]	s] related or MOS	er of week I to LSI c transisto	s listed i rcuit des rs, capaci	n []. ign wil itors, in	l be explained ductors and ir	. Structures, aterconnects will be		
tasks when n (1) CMOS pr Overview of characteristic also explaine (2) Analog c Architecture	rocess ary rocess a CMOS es and m ed. ircuit de and beh	y, we will nd device process t todeling t sign [2 w avior of]	I spend the es [2 weeks echnology methods fo veeks] basic analo	s] related or MOS	er of week I to LSI c transisto	s listed i rcuit des rs, capaci	n []. ign wil itors, in	l be explained ductors and ir nt source and	. Structures,		
tasks when n (1) CMOS pr Overview of characteristic also explaine (2) Analog c Architecture	rocess ary rocess a CMOS es and m ed. ircuit de and beh	y, we will nd device process t todeling t sign [2 w avior of]	I spend the es [2 weeks echnology methods fo veeks] basic analo	s] related or MOS	er of week I to LSI c transisto	s listed i rcuit des rs, capaci	n []. ign wil itors, in	l be explained ductors and ir nt source and	. Structures, aterconnects will be		
tasks when n (1) CMOS pi Overview of characteristic also explaine (2) Analog c Architecture amplifier wil (3) Digital ci	rocess ary CMOS cs and m cd. ircuit de and beh ll be exp rcuit de:	y, we will nd device process t todeling r esign [2 w avior of l lained. D sign [4 w	l spend the es [2 weeks echnology methods fo veeks] basic analo besign meth reeks]	s] related or MOS og circu hods fo	er of week to LSI c transisto tits such a r op-amp	s listed i rcuit des rs, capaci s constar s will be	n []. ign wil itors, in at curre explain	l be explained ductors and ir nt source and ed.	. Structures, terconnects will be current mirror		
tasks when n (1) CMOS p Overview of characteristic also explaine (2) Analog c Architecture amplifier wil (3) Digital ci Design meth	rocess ary CMOS cs and m cd. ircuit de and beh ll be exp rcuit de odologio	r, we will nd device process t todeling r sign [2 w avior of l lained. D sign [4 w es for cor	I spend the es [2 weeks echnology methods fo veeks] basic analo Design meth reeks] mbinationa	s] related or MOS og circu hods fo	er of week to LSI c transisto tits such a r op-amp	s listed i rcuit des rs, capaci s constar s will be	n []. ign wil itors, in at curre explain	l be explained ductors and ir nt source and ed.	. Structures, aterconnects will be		
tasks when n (1) CMOS pi Overview of characteristic also explaine (2) Analog c Architecture amplifier wil (3) Digital ci	rocess ary CMOS cs and m cd. ircuit de and beh ll be exp rcuit de odologio	r, we will nd device process t todeling r sign [2 w avior of l lained. D sign [4 w es for cor	I spend the es [2 weeks echnology methods fo veeks] basic analo Design meth reeks] mbinationa	s] related or MOS og circu hods fo	er of week to LSI c transisto tits such a r op-amp	s listed i rcuit des rs, capaci s constar s will be	n []. ign wil itors, in at curre explain	l be explained ductors and ir nt source and ed.	. Structures, terconnects will be current mirror		
tasks when n (1) CMOS pr Overview of characteristic also explaine (2) Analog c Architecture amplifier wil (3) Digital ci Design meth alithmetic log	rocess and CMOS cs and med. ircuit de and beh ll be exp rcuit de odologie gic unit	y, we will nd device process t todeling r sign [2 w lavior of l lained. D sign [4 w es for cor will be d	I spend the es [2 weeks echnology methods fo veeks] basic analo besign meth eeks] nbinationa iscussed.	s] related or MOS og circu hods fo l and so	er of week to LSI c: transisto nits such a r op-amp: equential	s listed i rcuit des rs, capaci s constar s will be circuits a	n []. ign wil itors, in at curre explain	l be explained ductors and ir nt source and ed.	. Structures, terconnects will be current mirror		
tasks when n (1) CMOS pr Overview of characteristic also explaine (2) Analog c Architecture amplifier wil (3) Digital ci Design meth alithmetic lo (4) Evaluatic	rocess ary rocess ary CMOS es and med. ircuit de and beh Il be exp ircuit de odologi gic unit on and o	r, we will nd device process t todeling r sign [2 w avior of 1 lained. D sign [4 w es for cor will be d ptimizatio	I spend the es [2 weeks echnology methods fo /eeks] basic analo besign meth eeks] nbinationa iscussed. on of digitt	s] related or MOS og circu hods fo l and se al circu	er of week to LSI c transisto uits such a r op-amp equential uits [2 week	s listed i rcuit des rs, capaci s constar s will be circuits a ks]	n []. ign wil itors, in nt curre explain re expl	l be explained ductors and ir nt source and ed. ained. Hardwa	. Structures, tterconnects will be current mirror are algorithms for		
tasks when n (1) CMOS p Overview of characteristic also explaine (2) Analog c Architecture amplifier wil (3) Digital ci Design meth alithmetic lo (4) Evaluatic Methodologi	rocess ary rocess ary CMOS cs and m ad. ircuit de and beh ll be exp rcuit de odologie gic unit on and of tes for e	y, we will nd device process t todeling r sign [2 w avior of l lained. D sign [4 w es for cor will be d ptimizativ valuating	I spend the es [2 weeks echnology methods fo veeks] basic analo besign meth eeks] mbinationa iscussed. on of digita and optim	s] related or MOS og circu hods fo l and se al circu	er of week to LSI c transisto uits such a r op-amp equential uits [2 week	s listed i rcuit des rs, capaci s constar s will be circuits a ks]	n []. ign wil itors, in nt curre explain re expl	l be explained ductors and ir nt source and ed. ained. Hardwa	. Structures, terconnects will be current mirror		
tasks when n (1) CMOS pr Overview of characteristic also explaine (2) Analog c Architecture amplifier wil (3) Digital ci Design meth alithmetic lo (4) Evaluatic	rocess ary rocess ary CMOS cs and m ad. ircuit de and beh ll be exp rcuit de odologie gic unit on and of tes for e	y, we will nd device process t todeling r sign [2 w avior of l lained. D sign [4 w es for cor will be d ptimizativ valuating	I spend the es [2 weeks echnology methods fo veeks] basic analo besign meth eeks] mbinationa iscussed. on of digita and optim	s] related or MOS og circu hods fo l and se al circu	er of week to LSI c transisto uits such a r op-amp equential uits [2 week	s listed i rcuit des rs, capaci s constar s will be circuits a ks]	n []. ign wil itors, in nt curre explain re expl	l be explained ductors and ir nt source and ed. ained. Hardwa	. Structures, tterconnects will be current mirror are algorithms for		
tasks when n (1) CMOS p Overview of characteristic also explaine (2) Analog c Architecture amplifier wil (3) Digital ci Design meth alithmetic lo (4) Evaluatic Methodologi methods will (5) Full custs	rocess ar CMOS cs and m ad. ircuit de and beh ll be exp rcuit de odologi gic unit on and o les for e l be also om layou	y, we will nd device process t isodeling r sign [2 w avior of l lained. D sign [4 w es for cor will be d ptimization explaine ut design	I spend the es [2 weeks echnology methods fo veeks] basic analo besign meth eeks] mbinationa iscussed. on of digita and optim d. [2 weeks]	s] related or MOS og circu hods fo l and so al circu	er of week to LSI c transisto iits such a r op-amp equential iits [2 wee he power	s listed i rcuit des rs, capaci s constar s will be circuits a ks] consump	n []. ign wil itors, in nt curre explain re expl tion an	l be explained ductors and ir nt source and ed. ained. Hardwa d delay of circ	. Structures, nterconnects will be current mirror are algorithms for suits are explained. Test		
tasks when n (1) CMOS p Overview of characteristic also explaine (2) Analog c Architecture amplifier will (3) Digital ci Design meth alithmetic lo; (4) Evaluatic Methodologi methods will (5) Full custo Design rules	rocess ary rocess ar CCMOS cs and m cd. ircuit de and beh ll be exp rcuit de odologi gic unit on and of es for e l be also om layor and layo	y, we will nd device process t todeling r sign [2 w avior of l lained. D sign [4 w es for cor will be d ptimization valuating explaine ut design out verifi	I spend the es [2 weeks echnology methods fo veeks] basic analo besign meth eeks] mbinationa iscussed. on of digitt and optim d. [2 weeks] cation met	numbe s] related or MOS og circu hods fo l and se al circu izing th	er of week to LSI c transisto its such a r op-amp equential its [2 week he power vill be exp	s listed i rcuit des rs, capaci s constar s will be circuits a ks] consump lained. F	n []. ign wil itors, in nt curre explain re expl tion an ull-cust	l be explained ductors and ir nt source and ed. ained. Hardwa d delay of circ om layout des	. Structures, tterconnects will be current mirror are algorithms for suits are explained. Test		
tasks when n (1) CMOS p Overview of characteristic also explaine (2) Analog c Architecture amplifier will (3) Digital ci Design meth alithmetic lo; (4) Evaluatic Methodologi methods will (5) Full custo Design rules	rocess ary rocess ar CCMOS cs and m cd. ircuit de and beh ll be exp rcuit de odologi gic unit on and of es for e l be also om layor and layo	y, we will nd device process t todeling r sign [2 w avior of l lained. D sign [4 w es for cor will be d ptimization valuating explaine ut design out verifi	I spend the es [2 weeks echnology methods fo veeks] basic analo besign meth eeks] mbinationa iscussed. on of digitt and optim d. [2 weeks] cation met	numbe s] related or MOS og circu hods fo l and se al circu izing th	er of week to LSI c transisto its such a r op-amp equential its [2 week he power vill be exp	s listed i rcuit des rs, capaci s constar s will be circuits a ks] consump lained. F	n []. ign wil itors, in nt curre explain re expl tion an ull-cust	l be explained ductors and ir nt source and ed. ained. Hardwa d delay of circ om layout des	. Structures, nterconnects will be current mirror are algorithms for suits are explained. Test		
tasks when n (1) CMOS p Overview of characteristic also explaine (2) Analog c Architecture amplifier wil (3) Digital ci Design meth alithmetic lo, (4) Evaluatic Methodologi methods will (5) Full custs Design rules circuits and l	cccessary roccess at CCMOS and med. ircuit de and beh Il be exp recuit de odologie gic unit on and o be also om layo pasic log	y, we will nd device process t iodeling r sign [2 w iavior of f lained. D sign [4 w es for cor will be d ptimization valuating explaine ut design out verifi- gic gates a	I spend the es [2 weeks echnology methods fo veeks] basic analo besign meth eceks] nbinationa iscussed. on of digita and optim d. [2 weeks] cation met are explain	numbe s] related or MOS og circu hods fo l and se al circu izing th	er of week to LSI c transisto its such a r op-amp equential its [2 week he power vill be exp	s listed i rcuit des rs, capaci s constar s will be circuits a ks] consump lained. F	n []. ign wil itors, in nt curre explain re expl tion an ull-cust	l be explained ductors and ir nt source and ed. ained. Hardwa d delay of circ om layout des	. Structures, tterconnects will be current mirror are algorithms for suits are explained. Test		
tasks when n (1) CMOS p Overview of characteristic also explaine (2) Analog c Architecture amplifier will (3) Digital ci Design metha alithmetic lo; (4) Evaluatic Methodologi methods will (5) Full custo Design rules circuits and l (6) Chip leve	eccessary rocess at CMOS es and m ed. ircuit de and beh ll be exp ircuit de odologie gic unit on and of es for et be also om layou and layo basic log	r, we will nd device process t todeling r sign [2 w lavior of l lained. D sign [4 w es for cor will be d ptimization will be d ptimization valuating explaine ut design to gates a design [2	I spend the es [2 weeks echnology methods fo veeks] basic analo besign meth eeks] nbinationa iscussed. on of digita and optim d. [2 weeks] (2 weeks] aveeks] 2 weeks]	numbe s] related og circu hods fo l and sc al circu izing th hods w	er of week to LSI c transisto uits such a r op-amp equential uits [2 week he power rill be exp sign meth	s listed i rcuit des rs, capaci s constar s will be circuits a ks] consump lained. F odologie	n []. ign wil ttors, in tt curre explain re expl tion an tion an s for R0	l be explained ductors and ir nt source and ed. ained. Hardwa d delay of circ om layout des DM and RAM	. Structures, tterconnects will be current mirror are algorithms for ruits are explained. Test sign methods for analog t will be explained.		
tasks when n (1) CMOS p Overview of characteristic also explaine (2) Analog c Architecture amplifier will (3) Digital ci Design metha alithmetic lo; (4) Evaluatic Methodologi methods will (5) Full custo Design rules circuits and l (6) Chip leve	eccessary rocess at CMOS es and m ed. ircuit de and beh ll be exp ircuit de odologie gic unit on and of es for et be also om layou and layo basic log	r, we will nd device process t todeling r sign [2 w lavior of l lained. D sign [4 w es for cor will be d ptimization will be d ptimization valuating explaine ut design to gates a design [2	I spend the es [2 weeks echnology methods fo veeks] basic analo besign meth eeks] nbinationa iscussed. on of digita and optim d. [2 weeks] (2 weeks] aveeks] 2 weeks]	numbe s] related og circu hods fo l and sc al circu izing th hods w	er of week to LSI c transisto uits such a r op-amp equential uits [2 week he power rill be exp sign meth	s listed i rcuit des rs, capaci s constar s will be circuits a ks] consump lained. F odologie	n []. ign wil ttors, in tt curre explain re expl tion an tion an s for R0	l be explained ductors and ir nt source and ed. ained. Hardwa d delay of circ om layout des DM and RAM	. Structures, tterconnects will be current mirror are algorithms for suits are explained. Test		
tasks when n (1) CMOS p Overview of characteristic also explaine (2) Analog c Architecture amplifier wil (3) Digital ci Design meth alithmetic lo; (4) Evaluatic Methodologi methods will (5) Full cust Design rules circuits and l (6) Chip leve Layout desig	eccessary roccess at a CMOS s and m d. ircuit de and behe l l be exp rcuit de exp of the exp rcuit de exp of the exp rcuit de exp of the exp in and of be also on m layou and layout m methor	y, we will and device process t todeling r sign [2 w avior of l lained. D sign [4 w es for cor will be d ptimizativ valuating explaine ut design out verifi gic gates a design [2 will be d ptimizativ valuating explaine	I spend the es [2 weeks echnology methods fo veeks] basic analo besign meth eeks] nbinationa iscussed. on of digitt and optim d. [2 weeks] cation met are explain 2 weeks] hip-level as	numbe s] related r MOS og circu hods fo l and sc al circu izing th hods we ed. Des	er of week to LSI c transisto uits such a r op-amp equential uits [2 week he power rill be exp sign meth	s listed i rcuit des rs, capaci s constar s will be circuits a ks] consump lained. F odologie	n []. ign wil ttors, in tt curre explain re expl tion an tion an s for R0	l be explained ductors and ir nt source and ed. ained. Hardwa d delay of circ om layout des DM and RAM	. Structures, tterconnects will be current mirror are algorithms for ruits are explained. Test sign methods for analog t will be explained.		
tasks when n (1) CMOS p Overview of characteristic also explaine (2) Analog c Architecture amplifier will (3) Digital ci Design metha alithmetic lo; (4) Evaluatic Methodologi methods will (5) Full custo Design rules circuits and l (6) Chip leve	eccessary rocess a a 'CMOS ss and m ed. ircuit de and beh ll be exp ircuit de odologi gic unit on and op ess for e b be also om layou and layout n methoc	y, we will nd device process t todeling 1 sign [2 w avior of] lained. D sign [4 w es for cor will be d ptimization avaluating explaine ut design [2 design [2 design [2] des and cl understar	I spend the es [2 weeks echnology methods fo veeks] basic analo besign meth eeks] nbinationa iscussed. on of digita and optim d. [2 weeks] (2 weeks] hip-level as ading [1 we	numbe s] related or MOS og circu hods fo l and so al circu izing th hods w ked. Des sssembly cek]	er of week to LSI c transisto its such a r op-amp equential its [2 week he power rill be exp sign meth y method:	s listed i reuit des rs, capaci s constar will be circuits a ks] consump lained. F addologie	n []. ign wil ttors, in it curre explain re expl tion an ull-cust s for Rt -based	l be explained ductors and ir nt source and ed. ained. Hardwa d delay of circ om layout des DM and RAM design flow w	. Structures, tterconnects will be current mirror are algorithms for ruits are explained. Test sign methods for analog t will be explained.		
tasks when n (1) CMOS p Overview of characteristic also explaine (2) Analog c Architecture amplifier will (3) Digital ci Design metha alithmetic lo; (4) Evaluatic Methodologi methods will (5) Full custo Design rules circuits and l (6) Chip leve Layout desig (7) Confirma	eccessary rocess a a 'CMOS ss and m ed. ircuit de and beh ll be exp ircuit de odologi gic unit on and op ess for e b be also om layou and layout n methoc	y, we will nd device process t todeling 1 sign [2 w avior of] lained. D sign [4 w es for cor will be d ptimization avaluating explaine ut design [2 design [2 design [2] des and cl understar	I spend the es [2 weeks echnology methods fo veeks] basic analo besign meth eeks] nbinationa iscussed. on of digita and optim d. [2 weeks] (2 weeks] hip-level as ading [1 we	numbe s] related or MOS og circu hods fo l and so al circu izing th hods w ked. Des sssembly cek]	er of week to LSI c transisto its such a r op-amp equential its [2 week he power rill be exp sign meth y method:	s listed i reuit des rs, capaci s constar will be circuits a ks] consump lained. F addologie	n []. ign wil itors, in it curre explain re expl tion an ull-cust s for R -based given if	l be explained ductors and ir nt source and ed. ained. Hardwa d delay of circ om layout des DM and RAM design flow w inccessary.	. Structures, tterconnects will be current mirror are algorithms for ruits are explained. Test sign methods for analog t will be explained.		

Course number U-ENG26 36114 LJ72 U-ENG26 36114 LJ71	メカトロニクス入門(2)
Course title (and course Hitle in English) メカトロニクス入門 Introduction of Mechatronics and department of affiliation Introduction of Mechatronics	Mechanisms and controls, 3 sessions These sessions will discuss the types of mechanical motion and their mechanisms in addition to the basic aspects of actuator control used in robotic systems.
Target year Brd year students or above Number of credits 2 Year/semesters 2021/Second semester Days and periods Wed.4 Class style Lecture Language distribution Japanese	Basics of robotics, 2 sessions These sessions will discuss robot manipulators and provide an overview of the kinematics and dynamics concepts.
[Overview and purpose of the course] Study of the basics of mechatronics, a multidisciplinary technology field comprised of mechanical and electronic aspects. The lectures will describe the history and concepts that make up the field of mechatronics and explain the individual technologies and applications of mechatronics.	Confirmation of learning achievement, 1 session Achievement of learning will be evaluated through a written test. Course feedback, 1 session
The individual technologies comprising mechatronics include sensor/actuator/computer interfaces, actuator control methods, and their mechanisms. In addition, we will discuss robot manipulators as an application of	[Course requirements]
mechatronics and explain concepts related to kinematics and dynamics.	N/A
[Course objectives]	[Evaluation methods and policy] Students will be evaluated primarily through tests, but points may also be earned from regular course
The objective of this course is to cultivate an understanding of the basic concepts of mechatronics, a multidisciplinary field combining the principles of mechanical and electronic engineering. The course will pursue the following six objectives: 1. Understanding the history and development of the field of mechatronics. 2. Understanding the configuration of mechatronic systems.	assignments. [Textbooks] Not used
2. Onderstandning the configuration of mechanome systems.	[References, etc.]
Understanding and acquiring modes of thinking about mechatronic systems through the study of examples.	(Reference books) Introduced during lectures
4. Study of the existing sensor and actuator systems and making selections.	[Study outside of class (preparation and review)]
Understanding computer control and the configuration of electronic machines that perform complex operations in different situations.	Review the content of the lecture through report assignments.
6. Understanding the basics of kinematics and dynamics of robotics as an application of mechatronic principles.	(Other information (office hours, etc.)) *Please visit KULASIS to find out about office hours.
[Course schedule and contents]	
Mechatronics, 3 sessions These sessions will explain the definition and history of mechatronics, and provide an overview of the basic configurational characteristics utilized in the field of mechatronics.	
Mechatronic components, 6 sessions These sessions will describe the interfaces between sensors, actuators, and computer components that make up mechatronic systems.	
I	

ר ר

Course nu										未更新			
	umber	U-EN	G26 4	6115 LJ72									
Course title (and course title in English)			指击工学 ation and Communication Engineering					ile, ient	Graduate School of Informatics Professor,HARADA HIROSHI Graduate School of Informatics Professor,Oki Eiji Graduate School of Informatics Associate Professor,MURATA HIDEI Graduate School of Informatics Associate Professor,AMAMOTO &				
Farget yea	r 4ti	n year students	or above	Number	of cred	lits	2	Year	/semesters	2021/First semester			
Days and perio	ods Tu	e.3	Clas	s style	Lectur	e			Language of instruction	Japanese			
[Overview	and	ourpose o	of the	course]									
[Course o	bjecti	ves]											
-		-											
[Course s	chedu	le and co	nten	ts]									
3times,													
3times,													
3times, 3times.													
2times,													
ltime,													
[Course re	auire	montel											
None	squire	anientoj											
[Evaluatio	on me	hods and	l polie	cy]									
[Textbook	s]												
[Referenc		-											
(Referer	nce be	ooks)											
			orona	ration on	d rovie	w/\7							
[Study or	teide				urevie	vv)]							
[Study ou	tside	of class (propu	un									
[Study ou	tside	of class (propo										
(Other int	forma	tion (offic	e ho	urs, etc.))	hours								
	forma	tion (offic	e ho	urs, etc.))	hours.								
(Other int	forma	tion (offic	e ho	urs, etc.))	hours.								

Course nu	mber	U-EN	G26 4	6116 LJ57	U-EN	G26	46116	LJ52		
Course title (and course title in English) Solid State Physics and Engineering and department of affiliation of affiliation										
arget year	• Brd y	ear students o	or above	Number	of cred	its	2	Year	/semesters	2021/Second semester
Days and perio	ds Tue.	5	Class	s style	Lectur	e			Language of instruction	Japanese
hysics inclu	iding qu l physic	antum an s such as	l stati group	stical physi theory. Th	cs. We i e final g	evie oal	ew a bas	sis of s	olid-state phy	understand various vsics, and then study e of modern solid-state
[Course ol		-		1						
As described	in the o	course des	criptio	on						
k-space,3tim physics of qu magnetics an ,1time, [Course re Brief review	asi-par d spinti quiren of solid	ronics,3tin nents] I-state phy	nes, sics u		year co	urse	s.	_		
[Evaluation Exam. and re		iods and	polic	;y]						
[Textbooks None [Reference (Reference	es, etc.	-								
								(Continue to	電子物性工学(2)↓↓↓

電子物性工学(2)	Co	urse numbe	U-J	ENG26 3	6117 LJ7	2					
[Study outside of class (preparation and review)]		n Vac	空電子工学 cuum Elect		gineering		Instructor's name, job ti and departr of affiliatior	title, G ment A		hool of Engi fessor,GOTOU	
(Other information (office hours, etc.)) Please visit KULASIS to find out about office hours.	Targ	et year	3rd year stude	ents or above	Numbe	r of credi	its 2	Year/s	emesters	2021/First	semester
Rease what NOLA ISID to find out about Office notes.	Days	and periods 1	Thu.1	Clas	s style	Lecture	;		Language of instruction	Japanese	
Courses delivered by instructors with practical work experience]	[Ov	erview and	d purpos	e of the	course]	_					
() Details of instructors' practical work experience 2) Details of instructors' practical work experience related to the course	of the tubes theor vacu	e electrons (and ion im y of vacuur	(or charged plantation m electroni damentals	d particles system the ic enginee on the co	s) with ele hat is used ering. This ontrol of el	ectromagne l for impui s course ex lectron bea	etic fields. rity introdu xplains fun	High pov action to s idamental	wer and hig semicondue ls of the ele	controlling t gh frequency ctors are base ectron motion ectrons from	vacuum ed on the 1 in
3) Details of practical classes delivered based on instructors' practical work experience	[Co	urse objec	ctives]								
		nderstand th netic fields,						ods to con	trol the ele	ctrons by ele	ctro-
	[Co	urse sche	dule and	l conten	ts]						
	[Extr The i vacu be pr [Mot The c descr for a [Elec Oper descr	um, will be esented, exp ion of electro electron traj ibed. Lens oplication o tron beam o ational prin	lectrons fro of thermio described plaining th trons in ele- jectories in effects of t of these effo devices] 4 hciple of the cially, prince	om solid t onic and f in detail. he effects ectromagn h electrost the electrost times he electror times he electror ciples of a	o vacuum ield emisss The form of image tetic fields atic, magy ostatic and actical dev actical dev a velocity] 4 times ion, which ula of the force and s and its co- netostatic, d magneto: vices will pased on e modulatic	n are mostly extractable space charg ontrol] 5 tin and orthog static fields be presente lectron bea on tube wil	ly used to e current of ges. mes gonal elec ls will also ed. ams, nam Il be preso	density for ctromagnet o be descril ely vacuun	ectrons in soli each mechar ic fields will bed, and cond n tubes, will l ving the adva	nism will be crete idea be
	[Feed Sum	lback] Once narizing the	e e above co	ontents, de					1.		
	-	u rse requi amental kno		-	nagnetic t	heory, dyr	namics, ele	ectrons in	solids, and	1 electric and	electronic
		its is necess								真空電子工	
											未更新

真空電子工学(2)	Course number U-ENG26 26118 SJ72
[Evaluation methods and policy] Grading will be done with the result of the term-end examination.	Course title (and course title in English) 若気電子回路演習 Exercise of Electric and Electronic Cir
[Textbooks]	
Not used No textbook will be used, but supplemental materials may be distributed in some cases.	Target year End year students or above Number of Days and periods Thu.3,4 Class style So
[References, etc.]	[Overview and purpose of the course]
(Reference books) Tetsuro Tanaka 『Fundamentals of Material Science and Engineering』 (Asakura) ISBN:978-4-254-21003- 3 Zyunzo Ishikawa 『Science and Technology of Charged Particle Beams』 (Corona) ISBN:978-4-339- 00734-3	Students will gain an understanding of phenomen, algebra, etc., learned during their first university y Students will also learn the basic concepts and wa electronic engineering. Also, in their personal enw error—freely and at their own initiative—numeric group, students will select a theme they find interr students will deepen their mutual understanding a different opinions.
[Study outside of class (preparation and review)]	different opinions.
Necessary preparation will be shown at the end of each lecture.	[Course objectives]
[Extraction of electrons from solid to vacuum] (In preparation) Review the band structure, density of states of electrons in solids, etc. that you leaned at "Fundamentals of Electron Physics and Devices" in the 2nd grade. Review the Poisson's equation, image charge method, etc. that you learned at "Electromagnetic Theory 1" in the 2nd grade.	Via circuit theory, numerical calculation, circuit s understanding of electrical and electronic circuits each student to establish a base on which to build broad field of electrical and electronic engineering
[Motion of electrons in electromagnetic fields and its control]	[Course schedule and contents]
(In preparation) Review the equations of motion of charged particles in electromagnetic fields that you are learning at "Electromagnetic Theory 2" in the 3rd grade.	Overview explanation (1 class) An overview of this seminar is presented, coverin The seminar environment will be established duri
[Electron beam devices] (In preparation) Review the operating principle of semiconductor transistors and their equivalent circuits that you learned at "Electronic Circuits" in the 2nd grade.	Time-domain analysis (3 classes) With respect to differential equations of circuits, v using linear algebra, and simple circuit experimen phenomena into those of low-dimensional system:
(Other information (office hours, etc.))	Frequency-domain analysis (2 classes)
Bring your calculator, for the exercise that will be made in the class.	Students will learn about alternating-current (AC)
Suggested reading: Steven Weinberg, "The discovery of subatomic particles", trans. by Saburo Honma (Chikuma) ISBN: 978-4- 480-08967-5.	2-port circuits (2 classes) For circuits having input and output, students will pole-zero structure.
*Please visit KULASIS to find out about office hours.	Group discussion (1 class) To deepen student understanding of course conter

Course title (and course title in English)	子回路演習 se of Electric an	d Electronic (n Circuits a	nstructor's name, job ti nd departn of affiliation	nent	Professor,SH Graduate Scl Associate Profe Graduate Scl Associate Profe Institute for I	hool of Energy Science IIMODA HIROSHI hool of Engineering ssor,HISAKADO TAKASH hool of Energy Science essor,ISHIZAWA AKIHIRC Liberal Arts and Science mior Lecture,KIMURA MASAYUK
Target year 2nd	year students or abov	w Number	of credit	s 2	Year	/semesters	2021/First semester
Days and periods Thu [Overview and p		ss style	Seminar			Language of instruction	Japanese
error-freely and at	ng. Also, in the their own initi select a theme	eir personal e ative—nume they find int	nvironme rical calco eresting, a	ents, studer ulation, ci and via dis	nts wil reuit si seussio	l be able to le imulation, and ons using post	earn about, via trial-and d circuit testing. In their ter presentations, etc.,
different opinions.							
[Course objective Via circuit theory, r	umerical calcu						
[Course objectiv Via circuit theory, r understanding of el- each student to esta broad field of electr [Course schedu	numerical calcu ectrical and electrical and electrical and electrical and electronical and electronical and electronical and conter	ctronic circui which to bui onic engineer	ts via link ld their ov	kages betw	een a	variety of vie	ts will boost their ewpoints. The aim is for of interest within the
[Course objectiv Via circuit theory, r understanding of el each student to esta broad field of electr [Course schedu Overview explanati	numerical calcu ectrical and elec blish a base on rical and electro le and conter on (1 class) a seminar is pre-	ctronic circui which to bui onic engineer nts] sented, cover	its via link ld their ov ing.	kages betw wn subject	ive ide	variety of vie eas and areas	ewpoints. The aim is for
Course objectiv Via circuit theory, r understanding of el- each student to esta broad field of electr Course schedu Overview explanati An overview of this The seminar enviro Time-domain analy	numerical calcu ectrical and electron blish a base on iical and electron le and conter on (1 class) s seminar is pre- nument will be e sis (3 classes) erential equation , and simple oi	ctronic circui which to bui onic engineer nts] sented, cover established du ons of circuits rcuit experim	its via link ld their ov ing. ting the to tring this s, via anal centation,	kages betw wn subject opics of ev first class. lysis using students v	een a ive ide aluatic circui vill lea	variety of vie eas and areas ons, goals, and t simulators, rn how to "6	ewpoints. The aim is for of interest within the d progress methods. phase plane analysis decompose"
Course objectiv Via circuit theory, r understanding of el- each student to esta broad field of electr Course schedu Overview explanati An overview of this The seminar enviro Time-domain analy With respect to diff With respect to diff	numerical calcu cetrical and elect blish a base on ical and electro le and conter on (1 class) seminar is pre- nment will be e sis (3 classes) erential equatio , and simple ci use of low-dime analysis (2 clas	ctronic circuit which to bui onic engineer nts] sented, cover stablished du ons of circuits recuit experimensional syste sess)	its via link ld their ov ing. ring the to rring this s, via anal eentation, rms, so as	expression of every strategies of every first class.	een a ive ide aluatio circui vill lea better	variety of vice eas and areas ons, goals, and t simulators, rn how to "e understanding	ewpoints. The aim is for of interest within the d progress methods. phase plane analysis decompose"
Course objectiv Via circuit theory, r understanding of el- each student to esta broad field of electr Course schedu Overview explanati An overview of this The seminar enviro Time-domain analy With respect to diff using linear algebra phenomena into the Frequency-domain Students will learn 2-port circuits (2 cli	umerical calcu ectrical and elect blish a base on ical and electro le and conter on (1 class) s seminar is pre- nment will be e sis (3 classes) erential equatio , and simple cin analysis (2 class about alternatin asses) input and outpu	etronie circui which to bui onic engineer nts] sented, cover stabilished du ons of circuits recuit experim ensional syste uses) ug-current (A	tts via link ld their ov ing. ring the to rring this s, via anal eentation, rms, so as C) circuit	kages betw wn subject ppics of ev first class. lysis using students v to gain a theory via	een a ive ide aluatio vill lea better a linka	variety of vice eas and areas ons, goals, an t simulators, rn how to "o understanding ges with time	ewpoints. The aim is for of interest within the d progress methods. phase plane analysis decompose"

雷気雷子回路演習(2)

_ _ _ _ _ _ _ _ _ _ _ _ _ _ poster presentations.

Active circuits (3 classes) Students will understand the concept of bias and deepen their understanding of circuit simulators and testing ising amplification, switches, and feedback.

Presentations (3 classes)

Via their preparations for poster presentations, as well as their actual presentations, students will deepen their understanding of course content; this will also provide an opportunity to confirm the extent of learning of each student

[Course requirements]

Prerequisites for this course are courses in fundamental theory of electrical circuits and in electrical and electronic circuits.

[Evaluation methods and policy]

Since this is an exercise subject, attending a class and working on an assignment is an essential requirement. Then, the achievement of the understanding of electrical and electronic circuits is evaluated by submitted reports. In addition, the attitude of the experimental room and active improvement measures are also evaluated.

Regarding the specific evaluation method, grades are calculated for each of active participation in the exercise, pre-assignment, development assignment, and submitted report by the deduction method from 100 ooints.

[Textbooks]

京都大学工学部電気系教室編:電気電子回路演習2016年度版

[References, etc.]

(Reference books) 奥村浩士 『エース電気回路理論入門』(朝倉書店) ISBN:4254227469 北野正雄 『電子回路の基礎』(レイメイ社)

[Study outside of class (preparation and review)]

As preparation for each seminar class, assigned exercises are to be performed and submitted to PandA. For review, students should perform work on advanced problems at home.

(Other information (office hours, etc.))

For exercises, assigned machines (notebook PC, breadboard, etc.) shall be brought to the classroom. Prior to starting their seminar, students are to attend a guidance meeting for an explanation of the overall course. Students who borrow portable calculation devices to perform experiments should manage these devices appropriately. Office hours are in the Professor's Lounge (S101) during second period on Thursdays. Students who do not understand pre-class assignments should definitely come during office hours and attend the seminar class only after their problems have been resolved.

*Please visit KULASIS to find out about office hours

電気電子工学基礎実験(2)

tests of the characteristics of these circuits.

[Course schedule and contents]

undamentals of experiments in electrical and electronic engineering (lectures and experiments) (3 classes) Discussion is made of aspects necessary in the performance of electronic/electrical engineering experiments, namely, the securing of a safe environment, the proper way to take experimental notes, how to draw graphs, and how to write related reports. Students will learn how to use an oscilloscope, which will give them a foundation in measurement technologies. Students will also have the opportunity to edit reports created by others, an activity designed to give them even keener insights in report writing.

Passive elements (experiments) (2 classes)

Prequency characteristics measurements (amplification, phase, etc.) are performed for circuits made from passive elements such as coils, capacitors, resistors, etc.

Active elements and amplifier circuits (experiments) (6 classes)

In these classes, characteristics measurements are performed for circuits made from diodes, bipolar transistors and operational amplifiers. Through these experiments, students will gain an understanding of the operations of amplifier circuits, etc.

Logic circuits (experiments) (2 classes)

tudents design and make combination circuits and sequential circuits to understand their operations.

confirmation of extent of student learning (2 classes)

Students will be asked questions regarding experiment methods, contents/details, and report writing. This will help to deepen student understanding of experimentation details and will also enable confirmation of the extent of student learning in this course.

[Course requirements]

Prerequisites for this course are "Fundamentals of Circuit Theory" and "Electric and Electronic Circuits."

[Evaluation methods and policy]

From the contents of experiment reports, evaluations can be made with respect to the extent of student learning of experimental techniques, as well as regarding the level of their understanding of electrical and electronic circuits. Each student s attitudes and engagements will also be evaluated in the experimental laboratory, and with respect to how proactive students are in striving for improvement. In other attendance at experiments is mandatory!

[Textbooks]

京都大学工学部電気系教室編 『電気電子工学基礎実験 2020年度版』 木下是雄 『理科系の作文技術』(中公新書)ISBN:4121006240

_____Continue to 電気電子工学基礎実験(3)↓↓↓

Course n	umber U-EN	IG26 26119 EJ72					
Course title (and course title in English)	電気電子工学 Fundamental Practice o	4.礎実験 Flectrical & Electronic I	ingineering	Instructor's name, job tit and departm of affiliation	nent	Assistant Profe Graduate Sel Assistant Profe Assistant Profe Institute of A Assistant Profe Sassistant Profe Graduate Sel Associate Profe Graduate Sel Associate Profe Graduate Sel Assistant Profe Graduate Sel	aool of Informatics Tessor,SATO TAKEHIRC tool of Engineering sor,TAKASHIMA HIDEAK dvanced Energy ssor,OHSHIMA SHINSUKI dvanced Energy ssor,KOBAYASHI SHINJ dvanced Energy ssor,SUAYASHI SHINJ dvanced Energy ssor,SUAYASHI SHINJ dvanced Energy ssor,SUAYASHI SHINJ dvanced Energy ssor,SUAYASHI SHINJ dvanced Energy ssor,SUAYAMA KAZUHIKC i for Sustainable Humanospher ssor,YAMAMOTO KOUJ nool of Engineering tessor,INAMAMOTO KOUJ nool of Engineering tessor,SONG BIAM ARYO nool of Engineering tessor,SOGABE YUSUKI for Sustainable Humanospher ssor,YABUKI MASANOR nool of Engineering tessor,SONG BIAN nool of Engineering tessor,SANO TAKASH
Farget yea	r 2nd year students	or above Number	of cred	its 2	Year	/semesters	2021/Second semester
Days and peri	ods Thu.1,2,3,4	Class style	Experi	ment		Language of instruction	Japanese
Via actual to employed ir these device electronic a	electrical and el s. Tests will also	of the characteris ectronic engineeri be performed to c its and elements,	ng fields onduct i	, students w nitial step ir	vill acc nvestig	uire the skills gation of the r	

[Course objectives]

The goals of this course are for students to acquire initial-stage testing techniques used within the electrical and electronic engineering fields, and to understand electrical and electronic circuits. The aim is to have tudents achieve these goals chiefly via the creation of electrical and electronic circuits, and via measurement udents achieve these goals chiefty via the communication of a state of a st

電気電子工学基礎実験(3)

[References, etc.]

(Reference books)

奥村浩士『エース電気回路理論入門』(朝倉書店) 奥村浩士『電気回路理論』(朝倉書店) 北野正雄『電子回路の基礎』(レイメイ社)

[Study outside of class (preparation and review)]

Students must be sure to attend the guidance meeting to be held before experiments begin, where they will receive an overall explanation, education on safety, etc.

(Other information (office hours, etc.))

A portion of course contents may be omitted or changed, or new contents may be added. On class days when experiments are performed, students must be sure to bring with them items designated beforehand, including report forms, etc.

Days and priods Tue.1 Class style Lecture Japanese [Overview and purpose of the course] Image: Interview and purpose of the course provides technologies based on electrical and electronic engineering in biomedical applications. Report assignment will be given for each topic. [Course objectives] Image: Interview and purpose of physiological phenomena and functions, and mathematical models, and understand simulation and analysis methods in biomedical applications Image: Interview and purpose of the course with practical work experience] [Course schedule and contents] Image: Interview system, angetocnecphalogram (MEG), functional magnetic resonance imaging (MRI), and ther applications Image: Interview system, angetocnecphalogram (MEG), functional magnetic resonance imaging (MRI), and there applications Image: Interview system, 2-3 times, simulation of informatios processing in neuron, stoinformatics Cognitive engineering 2-3 times, systems engineering approach and biomedical application to life Review, Itime, The level of understanding on this lecture will be confirmed. Image: Interview systems, Sensine systems applications in neuron, stoinformatics Report assignment using and its applications Image:	Course nu	mber	U-ENG26 46200 L	J72				生体医療工学(2)	
Corres tip HKR #L ?? Hard or over tip on over the correst in the corest in t						Professor,MA Graduate Sch Professor,KC	ATSUDA TETSUYA nool of Engineering DBAYASHI TETSUO	A report is given in the class on each theme for evaluating the level of understanding of the	
住地区地: Professor: JSHI JSHIN Find and Blenon: Expirement Bloomded Application or activity Find and Blenon: Expirement Bloomded Application or activity Find and Blenon: Expirement Bloomded Application find activity find activity find activity <td< td=""><td>Course title</td><td></td><td></td><td></td><td>Instructor's</td><td></td><td></td><td>evaluation of the reports.</td><td></td></td<>	Course title				Instructor's			evaluation of the reports.	
English i i< i i< i<					name, job title,	Professor, ISI	HII SHIN	[Textbooks]	
Farget year they are students or show Number of credits 2 Year/semesters 2021/First semester Onys and periods Tue.1 Class style Lecture Jupped minitial Japanese Objectives and purpose of the course) To course provides technologies based on electrical and electronic regimering in biomedical applications. Elstudy outside of class (preparation and review)] Report assignment will be given for each topic. (Other information (office hours, etc.)) The contents of the lecture and their office hours. Course objectives Course objectives (Other information (office hours.) The contents of the lecture and their office hours. Course schedula and analysis methods in biomedical applications Course schedula and analysis methods in biomedical applications (Other information (office hours.) Clubiodynamics simulation 2-3 times, brain nerve system, magnetonerophalogram, function, bioimformatics or goint access, stillation, of their one system, magnetonerophalogram, function, bioimformatics or goint access, stillation, of the course of the co		Electrical and	Electronic Engineering in Biomec	dical Applications		Professor,DO Graduate Scl	DI SHINJI nool of Informatics	Handouts are given at the class.	
Target year the year students or above Number of credits 2 Year/seemsetter 2021/First senseler Days and periods Tue.1 Class style Lecture apage/stimute Japanese (Overview and purpose of the course) Ite course provides technologies based on electrical and electronic engineering in biomedical applications. [Study outside of class (preparation and review)] Course provides technologies based on electrical and electronic engineering in biomedical applications. Ite course provides technologies based on electrical and electronic engineering in biomedical applications. Course schedule and contents] Ite course schedule and contents (Modynamics simulation. 2-3 times, electrophysiology, computer simulation of cell and biodynamics from merve system, magnetenenchology of their applications. [Course achievered by instructors with practical work experience Cognitive engineering. 3-3 times, cleatures of human cognitive activities from the viewpoint of psychology, computer simulation on processing in neuron, matchiending and ambiguetants. [Course with practical content delivered by instructors i' practical work experience Cognitive engineering. 3-3 times, cleatures of human cognitive activities from the viewpoint of psychology, computer activitities from the viewpoint of psychology, computer activ								[References, etc.]	
Days and periods Tue.1 Class style Lecture Jupanese Days and periods Tue.1 Class style Lecture Jupanese Diversion and purpose of the course] Course objectives] Report assignment will be given for each topic. To acquire fundamental knowledge of physiological phenomena and functions, and mathematical models, and understand simulation and analysis methods in biomedical applications Course objectives] [Course schedule and contents] Cell/biodynamics simulation.2-3times,clectrophysiology, computer simulation of cell and biodynamics magnetic resonance imaging (MRM), and ther applications [Courses delivered by instructors with practical work experience (1) Category A course with practical content delivered by instructors with practical work experience (2) Details of practical content delivered by instructors in practical work experience related to the course magnetic resonance gimaging (MRM), and ther applications Visualization.2-3times, systems engineering approach and biomedical application to life Review, Itime, The level of understanding on this lecture will be confirmed. (Course requirements] None						Graduate Scl	nool of Energy Science	(Reference books)	
Day and periods Tue.1 Class style Lecture upperformation [Overview and purpose of the course]	Target year	• 4th ye	ar students or above Numb	per of cred	lits 2 Yea	ar/semesters	2021/First semester	[Study outside of class (preparation and review)]	
[Dverview and purpose of the course] The course provides technologies based on electrical and electronic engineering in biomedical applications. [Course objectives] To acquire fundamental knowledge of physiological phenomena and functions, and mathematical models, and understand simulation and analysis methods in biomedical applications [Course schedule and contents] Call biodynamics simulation of analysis methods in biomedical applications [Course schedule and contents] Call biodynamics simulation, 2-stimes, brain nerve system, magnetoencephalogram (MEG), functional magnetic resonance imaging (MRI), and their applications Visualization 2-stimes, strain nerve system, sparsetonecephalogram (MEG), functional Medeling and simulation of finan evervisites from the viewpoint of psychology, conguitive engineering, 2-stimes, strain nerve system, sparsetone copinic exitives for the viewpoint of psychology, conguitive engineering, 2-stimes, straines applications Biomedical systems, engineering approach and biomedical application to life Review, Itime, The level of understanding on this lecture will be confirmed. [Course requirements] None	Days and perio	ds Tue.1	Class style	Lecture	e	Language of instruction	Japanese		
The course provides technologies based on electrical and electronic engineering in biomedical applications. ICourse objectives] The contents of the lecture and their order are subject to changes depending on the situation each year. *Please visit KULASIS to find out about office hours. ICourse schedule and contents] Coll/biodynamics simulation, 2-3times, electrophysiology, computer simulation of cell and biodynamics Brain function measurement, 2-3times, simulation, steering, optimization Modeling and simulation to rhinques for numerical simulation, steering, optimizes Cognitive engineering, 3-3times, features of human cognitive activities from the viewpoint of psychology, computer simulation to life Review, Itime, The level of understanding on this lecture will be confirmed. ICourse requirements] None	Overview	and pu	rpose of the course	e]		••		(Other information (office hours ate))	
To acquire findamental knowledge of physiological phenomena and functions, and mathematical models, and understand simulation and analysis methods in biomedical applications [Courses schedule and contents] Cell/biodynamics simulation, 2-3times, electrophysiology, computer simulation of cell and biodynamics Brain function measurement, 2-3times, shimulation, steering, optimization Modeling and simulation of brain nerve system, 2-3times, simulation of information processing in neuron, mathematical modeling and analysis of higher brain function, bioinformatics Cognitive engineering, 2-3times, factures of human cognitive activities from the viewpoint of psychology, congnitive engineering, 2-3times, systems engineering approach and biomedical application to life Review, Itime, The level of understanding on this lecture will be confirmed. [Course requirements] None		· ·	•	-	nd electronic engi	ineering in bio	medical applications.		n each year.
To acquire findamental knowledge of physiological phenomena and functions, and mathematical models, and understand simulation and analysis methods in biomedical applications [Courses schedule and contents] Cell/biodynamics simulation, 2-3times, electrophysiology, computer simulation of cell and biodynamics Brain function measurement, 2-3times, shimulation, steering, optimization Modeling and simulation of brain nerve system, 2-3times, simulation of information processing in neuron, mathematical modeling and analysis of higher brain function, bioinformatics Cognitive engineering, 2-3times, factures of human cognitive activities from the viewpoint of psychology, congnitive engineering, 2-3times, systems engineering approach and biomedical application to life Review, Itime, The level of understanding on this lecture will be confirmed. [Course requirements] None	[Course o	oiective	sl					*Discourse VIII ACIO de final autoriante afras hauto	2
ICourse schedule and contents] [Coll/biodynamics simulation,2-3times, electrophysiology, computer simulation of cell and biodynamics Brain function measurement,2-3times, lectrophysiology, computer simulation, steering, optimization Modeling and simulation of brain nerve system, simulation, bioinformatics Cognitive engineering and its applications Biomedical systems,2-3times, steakers of human cognitive activities from the viewpoint of psychology, cognitive engineering and its applications Biomedical systems,2-3times, steakers, systems engineering approach and biomedical application to life Review, 1time, The level of understanding on this lecture will be confirmed. ICourse requirements] None	- To acquire fi	indamer	tal knowledge of phys				athematical models,	Please visit KOLASIS to find out about office nours.	
[Course schedule and contents] Call/biodynamics simulation,2-3times, cleatrophysiology, computer simulation of call and biodynamics Brain function measurement,2-3times, prain nerve system, magnetoencephalogram (MEG), functional magnetic resonance imaging (fMRI), and their applications Visualization,2-3times, visualization techniques for numerical simulation of information processing in neuron, Modeling and analysis of higher brain function, bioinformatics Cognitive engineering,2-3times, features of human cognitive activities from the viewpoint of psychology, Congnitive engineering approach and biomedical application to life Review, Itime, The level of understanding on this lecture will be confirmed. [Course requirements] None	and understa	nd simul	ation and analysis met	thods in bio	medical applicati	ions			
Cell/biodynamics simulation.2-3times,electrophysiology, computer simulation of cell and biodynamics Brain function measurement,2-3times,brain nerve system, magnetoencephalogram (MEG), functional magnetic resonance imaging (fMRI), and their applications Visualization 2-3times, visualization techniques for numerical simulation, steering, optimization Modeling and simulation of brain nerve system,2-3times, simulation of informatios Cognitive engineering, 2-3times, factures of human cognitive activities from the viewpoint of psychology, congnitive engineering and malysis of higher brain function, bioinformatics Cognitive engineering, 2-3times, systems engineering approach and biomedical application to life Review, Itime, The level of understanding on this lecture will be confirmed. (3) Details of practical classes delivered based on instructors' practical work experience Review, Itime, The level of understanding on this lecture will be confirmed.	[Course se	chedule	and contents]						
 magnetic resonance imaging (fMRI), and their applications Visualization,2-3times, visualization techniques for numerical simulation, steering, optimization Modeling and analysis of higher brain function, bioinformatics Cognitive engineering, 2-3times, features of human cognitive activities from the viewpoint of psychology, congnitive engineering, 2-3times, systems engineering approach and biomedical application to life Review, Itime, The level of understanding on this lecture will be confirmed. (3) Details of practical classes delivered based on instructors' practical work experience (3) Details of practical classes delivered based on instructors' practical work experience (3) Details of practical classes delivered based on instructors' practical work experience (3) Details of practical classes delivered based on instructors' practical work experience (3) Details of practical classes delivered based on instructors' practical work experience (4) Details of practical classes delivered based on instructors' practical work experience (3) Details of practical classes delivered based on instructors' practical work experience (3) Details of practical classes delivered based on instructors' practical work experience (3) Details of practical classes delivered based on instructors' practical work experience (4) Details of practical classes delivered based on instructors' practical work experience (5) Details of practical classes delivered based on instructors' practical work experience (6) Details of practical classes delivered based on instructors' practical work experience (7) Details of practical classes delivered based on instructors' practical work experience (8) Details of practical classes delivered based on instructors' practical work experience (9) Details of practical classes delivered based on instructors' practical work experience<!--</td--><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td>									
Modeling and simulation of brain nerve system,2-3times, simulation of information processing in neuron, mathematical modeling and analysis of higher brain function, bioinformatics Cognitive engineering.2-3times, features of human cognitive activities from the viewpoint of psychology, congnitive engineering and its applications Biomedical systems,2-3times, systems engineering approach and biomedical application to life Review, Itime, The level of understanding on this lecture will be confirmed. (3) Details of practical classes delivered based on instructors' practical work experience ICourse requirements] None None (3) Details of practical classes delivered based on instructors' practical work experience						phalogram (M	EG), functional	(2) Details of instructors practical work experience related to the course	
None None	Modeling an mathematica Cognitive en congnitive en Biomedical s	d simula l modeli gineerin ngineerin systems,	ion of brain nerve sys ng and analysis of high 2,2-3times,features of g and its applications -3times,systems engir	stem,2-3time her brain fur human cogr neering appr	es,simulation of i nction, bioinform nitive activities fr roach and biomed	information pro- natics from the viewpo dical applicatio	occessing in neuron,	(3) Details of practical classes delivered based on instructors' practical work experience	
	[Course re	quirem	ents]						
Continue to 生砵医療工学(2)↓↓↓	None								
						Continue to	生体医療工学(2)↓↓↓		

										未更新
Course numb	oer	U-EN	G26 3	6201 EJ72						
		子工学実 f Electrica		lectronic Eng	ineering	nan and	tructor's ne, job til I departm ffiliation	tle, hent	Associate Prof Graduate Scl Program-Specific Ass Graduate Scl Program-Specific Pro Research Institut Associate Profe Graduate Scl Associate Prof Graduate Scl Associate Prof Academic Center Academic Center Senior Lectu Graduate Scl Senior Lectu Graduate Scl	tool of Engineering essor,FUNATO MITSURI, lool of Engineering mool of Engineering mool of Engineering ofessor,NAKAMURA TAKETSUN for Sustainable Humanospher Sosr,UEDA YOSHIKATSU tool of Informatics sosr,UEAA HDIEKAZL tool of Engineering fessor,KOBAYASHI KEI for Computing and Media Studie essor,KONATO AKYOTA tool of Engineering rer,HOSOE YOUHEI tool of Engineering rer,HOSOE YOUHEI tool of Engineering
farget year	3rd y	ear students	or above	Number o	of cred	its	2	Year	/semesters	2021/First semester
Days and periods	Fri.1,	2,3,4	Class	s style	Experi	men	t		Language of instruction	Japanese
[Overview ar	nd pu	irpose o	f the	course]						
In this course, s	tuden	ts acquir	e fund	amental kno	owledge	and	1 practic	al skil	ls, via basic e	xperiments and

discussions, regarding electrical machines, semiconductor properties and devices, electromagnetic waves, computers, and communications

[Course objectives]

The goals of this class are for students to gain an understanding of fundamental items, including the principles and characteristics of various electrical equipment, semiconductor characteristics and device characteristics, electromagnetic wave propagation and interference, computer hardware and software, characteristics of communication methods, etc.

[Course schedule and contents]

Overview of practical of electrical and electronic engineering (1 class) Explanation is made of fundamental items and points of special precaution for experiments in electrical and electronic engineering, and students are educated in safety issues related to experiments.

Electrical equipment and devices (2 classes)

Students perform measurement of the basic characteristics of transformers, induction machines, direct current (DC) machines, and synchronous machines. Students will gain an understanding of the characteristics of generators and electric motors, and they will also study three-phase alternating current.

Semiconductor characteristics and devices (4 classes) ______Continue to 電気電子工学実験(2)↓↓↓

電気電子工学実験(2)

Students will measure band gap, light absorption, and other characteristics of semiconductors; measurement is also made of the characteristics of diodes and field-effect transistors, basic devices that use semiconductors. In this way, students gain an understanding of their operations and of the physics that serve as the ackground for such devices.

Fundamentals of electromagnetic waves (2 classes)

Experiments are performed on the propagation of electromagnetic waves in dual conductor lines and in free space, enabling students to gain knowledge of the characteristics and measurement methods of electromagnetic waves.

Microcomputers (2 classes)

Using microcomputers (2 values) using microcomputers, students will gain an understanding the structure (composition) and functions of computers, as well as an understanding of the relationships between hardware and software within a computing system.

Communications fundamentals (2 classes) Measurement is made of time signals and frequency spectra, the basic modulation method used in ommunications. Students will understand the characteristics of various modulation methods, as well as the effects of sampling.

Confirmation of extent of student learning (2 classes) Discussion is made regarding experiment methods and contents, enabling students to deepen their understanding of experiment details and giving them a greater ability to explain the like. Additionally, confirmation is made of the extent of student learning.

[Course requirements]

Prerequisites for this course are student acquisition of fundamental knowledge of electrical circuits, electronic circuits, and electromagnetism. Students must also have completed a course in fundamental practice of electrical & electronic engineering.

[Evaluation methods and policy]

From the contents of experiment reports, evaluations can be made with respect to the extent of student learning of experimental techniques, as well as regarding the level of their understanding of electrical and electronic circuits. Evaluation will also be made of each student's attitudes and engagement in the experimental laboratory. Therefore, attendance at experiments is mandatory!

[Textbooks]

京都大学工学部電気系教室編:電気電子工学実験2019年版

[References, etc.]

(Reference books) 京都大学工学部電気系教室編:電気電子工学基礎実験

_____Continue to 電気電子工学実験(3)↓↓↓

智子工学実験(3) dy outside of class (preparation and review)] nts must read and study the textbook before each experiment.	Course number U-ENG26 36202 PJ72 Graduate School of Engineering
ts must read and study the textbook before each experiment.	
ts must read and study the textbook before each experiment.	Senior Lecturer, YOSUKE ITO Graduate School of Engineering
	Associate Professor,KAKEYA ITSÜI Graduate School of Engineering
	Assistant Professor,KANEKO MITSU Graduate School of Engineering
or information (office hours atc.)	Course title (and course) 電気電子工学実習 Instructor's name, job title, Graduate School of Engineering
ner information (office hours, etc.)) the are required to attend the 1st class (Overview of Practice of Electrical and Electronic Engineering)	title in English) Advanced Practice of Electrical and Electronic Engineering and department of affiliation and department Graduate School of Informatics
held before experiments begin. At this class, overall explanations are made, as well as education about etc.	Associate Professor, SHINKUMA RIYOU Graduate School of Engineering
se visit KULASIS to find out about office hours.	Assistant Professor,ISHI RYOT Graduate School of Informatics
	Assistant Professor,HIGASHI HIR(Graduate School of Engineering
	Associate Professor, SAKAMOTO TAK
	Target year Bid year students or above Number of credits 2 Year/semesters 2021/Second seme
	Days and periods Fri.1,2,3,4 Class style Practical training Language distution Japanese
	[Overview and purpose of the course]
	[Course objectives]
	[Course schedule and contents]
	Techniques and safety for experiments, ltime, Power electronics,4times,
	DC servo mortors,4times,
	Semiconductor devices ,4times, Materials for electronics,4times,
	Communication systems,4times, Logic circuits,4times,
	Feedback,2times,
	[Course requirements]
	None
電子工学実習(2)	未更新 Course number U-ENG26 36203 LJ72
	Course title Instructor's Graduate School of Engineering
uation methods and policy]	(and course 電力システム工学 name, job title, title in Power System Engineering and department Graduate School of Energy Scie
	English)
ooks]	Target year Brd year students or above Number of credits 2 Year/semesters 2021/Second seme
	Days and periods Mon.1 Class style Lecture Language distuition Japanese
ences, etc.]	[Overview and purpose of the course]
ference books)	Electric power system is a large-scale engineered system to supply electrical energy from generation facil through substations, transmission and distribution networks, to loads. This course provides an introduction
	power systems engineering for students of electrical and electronic engineering. Topics include the system structure, interconnected systems, dc and ac transmissions, stability, frequency and voltage control, econo
/ outside of class (preparation and review)]	aspects of power system operation, and fault analysis.
	[Course objectives]
r information (office hours, etc.))	The goal of this course is to understand fundamentals of power systems engineering, including their opera analysis, and control.
visit KULASIS to find out about office hours.	[Course schedule and contents]
	Intriductuon, I time, Features of power system and the purpose of network operation are introduced.
	System structure and Per Unit (PU) system,1-2times,Dc and ac power transmission are explained from the view point of system structure. Per unit method is explained.
	Frequency control,2-3times,Controlling methods for keeping synchronicity at 60/50 Hz are explained. Voltage control,2times,Voltage levels of power system is classified. The control method for keeping the
	voltage constant is explained.
	Stability, 3 times, System stability is explained from the view point of engineering and applied mathematics
	Fault analysis,2times,Fault analysis of power system is introduced.
	Fault analysis,2times,fault analysis of power system is introduced. System Operation,1-2times,Operating method of power system with various power sources. Summary, 1 times,
	System Operation,1-2times,Operating method of power system with various power sources. Summary, 1 times,
	System Operation,1-2times,Operating method of power system with various power sources. Summary, 1 times, [Course requirements] Circuit Theory (60630, 60030, 60220); Electric Machinery Fundamentals (61050); Electric Power
	System Operation,1-2times,Operating method of power system with various power sources. Summary, 1 times, [Course requirements]
	System Operation, 1-2times, Operating method of power system with various power sources. Summary, 1 times, [Course requirements] Circuit Theory (60630, 60030, 60220); Electric Machinery Fundamentals (61050); Electric Power Engineering 1 (61070) [Evaluation methods and policy]
	System Operation,1-2times,Operating method of power system with various power sources. Summary, 1 times, [Course requirements] Circuit Theory (60630, 60030, 60220); Electric Machinery Fundamentals (61050); Electric Power Engineering 1 (61070)

Course nu Course title (and course title in	umber 応用電力	U-ENG26 462	J+ LJ/∠		Gradu	ate Sch	ool of Engineering
(and course title in	応用電力					are SCh	ooi of Engineering
(and course title in	応用電力				Profes	sor,MA	TSUO TETSUJI
(and course title in	応用電力			Instructor's			ool of Energy Scie
		り工学		name, job t	itle,	ate Proi	essor, I AKAI SHIG
	Applied	Electric Power E	ngineering	and departs of affiliation		ne Lectur	er,YAMAKAWA YU
English)				or anniador		e Lecture	,MATSUMURA YASU
					Dant di	T	SOUDA NAO
l arget yea	th ye	ar students or above N	umper of crea	115 2	rear/seme	sters	2021/First semes
Days and perio	ods Mon.3	3 Class	tyle Lecture	;	Language	of instruction	Japanese
[Overview	and pu	rpose of the co	ourse]				
						incid	Power plants,
[Course o	hingtive						
			fundamentals o	f nower ge	neration techn	nologies	
				i ponei ge		lologie	
-							
"1. Introduc	tion (1 cla	ass)					
Provide an o	overview	of present condit	ons, future trend	s, etc. with	respect to end	ergy su	pply, including ele
2. Thermal 1	power ger	neration (3 classe	;)				
		er generation, as v	ven as the comp	nents und	sperating prin	leipies	or merman power
2 Hydroele	atria norre	ar concretion () a	lassas)				
5. Tiyutoele	cure powe	er generation (2 c	lasses)				
				ake up hyd	roelectric pov	ver stat	ions, as well as
		-	-				
4. Nuclear p	ower gen	eration (3 classes)				
			peration of nucle	ar reactors	as well as the	e types	of nuclear power
stations and	nuclear I	uci.					
					Contin	ue to /	心用电力工子(2)。
	Days and peri [Overview This course engineering Electronic F fundamenta [Course c The goal of [Course c The goal of [Course s "1. Introduc Provide an d power, and 2. Thermal After review combined c; generation p 3. Hydroele After discus the dams, w hydraulic tu 4. Nuclear p After review of nuclear p	Days and periods Mon [Overview and pu This course provides engineering. This is t Electronic Engineerin fundamentals and cur [Course objective The goal of this course [Course objective The goal of this course [Course schedule "1. Introduction (1 cl Provide an overview power, and describe t 2. Thermal power get After reviewing the b combined cycle power generation plants. 3. Hydroelectric pow After discussing the 1 the dams, waterways hydraulic turbines an 4. Nuclear power gen After reviewing the b	Days and periods Mon.3 Class s [Overview and purpose of the cc This course provides an introduction tc engineering. This is the first course in p Electronic Engineering. Topics include fundamentals and current trends of rem [Course objectives] The goal of this course is to understance [Course objectives] "1. Introduction (1 class) Provide an overview of present conditi power, and describe the outline of the c 2. Thermal power generation (3 classes) After reviewing the basics of thermody combined cycle power generation, as w generation plants. 3. Hydroelectric power generation (2 c After discussing the basics of hydraulic turbines and hydraulic turbines 4. Nuclear power generation (3 classes)	Days and periods Mon.3 Class style Lecture [Overview and purpose of the course] This course provides an introduction to power generatic engineering. This is the first course in power and energy Electronic Engineering. Topics include fundamentals of fundamentals and current trends of renewable energy restingtion of the course and its go. "1. Introduction (1 class) Provide an overview of present conditions, future trends power, and describe the outline of the course and its go. 2. Thermal power generation (3 classes) After reviewing the basics of thermodynamics, explain combined cycle power generation, as well as the compregeneration plants. 3. Hydroelectric power generation (2 classes) After discussing the basics of hydraulics, explain the st the dams, waterways, surge tanks, pipelines, etc. that m hydraulic turbines and hydraulic turbine generators. 4. Nuclear power generation (3 classes) After reviewing the basics of atomic physics, explain be of nuclear power generation, and the operation of nuclear power generation (3 classes)	Days and periods Mon.3 Class style Lecture [Overview and purpose of the course] This course provides an introduction to power generation technolo engineering. This is the first course in power and energy engineeri Electronic Engineering. Topics include fundamentals of hydraulic, fundamentals and current trends of renewable energy resources, at ICourse objectives] The goal of this course is to understand fundamentals of power generation (1 class) Provide an overview of present conditions, future trends, etc. with power, and describe the outline of the course and its goals. 2. Thermal power generation (3 classes) After reviewing the basics of thermodynamics, explain the types o combined cycle power generation (2 classes) After discussing the basics of hydraulics, explain the structures an the dams, waterways, surge tanks, hipelines, etc. that make up hyd hydraulic turbines and hydraulic turbine generators. 4. Nuclear power generation (3 classes) After reviewing the basics of atomic physics, explain basic inform of nuclear power generation, and the operation of nuclear reactors.	Target year th year students or abov Number of credits 2 Year/seme Days and periods Mon.3 Class style Lecture angage [Overview and purpose of the course] This course provides an introduction to power generation technologies for stude engineering. This is the first course in power and energy engineering in the Sch Electronic Engineering. Topics include fundamentals of hydraulic, thermal, and fundamentals and current trends of renewable energy resources, and batteries. [Course objectives] The goal of this course is to understand fundamentals of power generation technologies "1. Introduction (1 class) Provide an overview of present conditions, future trends, etc. with respect to energover, and describe the outline of the course and its goals. 2. Thermal power generation (3 classes) After reviewing the basics of thermodynamics, explain the types of thermal power combined cycle power generation (2 classes) After discussing the basics of hydraulics, explain the structures and characterist the dams, waterways, surge tanks, pipelines, etc. that make up hydroelectric powhydraulic turbines and hydraulic turbine generators. 4. Nuclear power generation (3 classes) After reviewing the basics of thydraulics, explain the structures and characterist the dams, waterways, surge tanks, pipelines, etc. that make up hydroelectric powhydraulic turbines and hydraulic turbines and hydraulic turbines and hydraulic turbines and hydraulic turbine generators. 4. Nuclear power generation (3 classes)	Days and periods Mon.3 Class style Lecture Language distance [Overview and purpose of the course] This course provides an introduction to power generation technologies for students of e engineering. This is the first course in power and energy engineering in the School of E Electronic Engineering. Topics include fundamentals of hydraulic, thermal, and nuclea fundamentals and current trends of renewable energy resources, and batteries. ICourse objectives] The goal of this course is to understand fundamentals of power generation technologies ICourse objectives] "I. Introduction (1 class) Provide an overview of present conditions, future trends, etc. with respect to energy suppower, and describe the outline of the course and its goals. 2. Thermal power generation (3 classes) After reviewing the basics of thermodynamics, explain the types of thermal power static combined cycle power generation (2 classes) After discussing the basics of hydraulics, explain the structures and characteristics of p the dais, waterways, surge tanks, pipelines, etc. that make up hydroelectric power stat hydraulic turbines and hydraulic turbine generators. 4. Nuclear power generation (3 classes) After reviewing the basics of atomic physics, explain basic information on nuclear fissi of nuclear power generation, and the operation of nuclear reactors, as well as the types

5. Electrical generation by battery (2 classes)
Explain the principles of the conversion of chemical energy to electrical energy, fuel cells, rechargeable lithium batteries, and so on.

6. Summary (feedback class)

As well as summarizing the electrical generation methods we have studied, confirm the degree of learning attainment."

[Course requirements]

Basic circuit theory; Fundamental physics and chemistry

[Evaluation methods and policy]

Final examination or homeworks in the term.

[Textbooks]

Handouts.

[References, etc.] (Reference books)

[Study outside of class (preparation and review)]

Students are advised to review class material using documents, etc.

(Other information (office hours, etc.))

*Please visit KULASIS to find out about office hours.

[Courses delivered by instructors with practical work experience]

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

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

Course nur	mber U-ENG26 36205 LJ72			機械学習(2)
	mber U-ENG20 36203 L372 機械学習 Machine Learning	name, job title, Profe and department Grad	uate School of Informatics ssor,ISHII SHIN uate School of Informatics ssor,NISHINO KO	[Course requirements] Students are required to have knowledge of computer software (60370).
				[Evaluation methods and policy]
T arget year Days and period	ds Thu.3 Class style Lectur		esters 2021/Second semester of instruction Japanese	[Evaluation method] Marks from exercises in teaching sessions and reports involving programming (80%); evaluation of performance in teaching sessions (20%) Performance in teaching sessions is evaluated based on participation and remarks made in teaching sessions.
-	and purpose of the course]	1 11 12 10	11 1 1 0 1 1	[Evaluation policy] Achievement targets are evaluated according to the grade evaluation policy of the Faculty of Engineering.
	sions aim to help students learn the basics tical foundations and applications of stati			remerenen auges als eradated destrung to the grade eradation poney of the radaty of Engineering.
supervised leased lease	arning, unsupervised learning, and reinfo blex problems.			[Textbooks] Others; printouts are used.
[Course ob	<i>·</i> ·		1 4 11 4 4 1	[References, etc.]
evel by writi [Course sc	nowledge about the basics of machine lea ing reports that involve programming. chedule and contents]			(Reference books) Others; Bishop, C., (translated by Motoda, H., and others), Pataan ninshiki to kikai gakushuu jouge - beizu riron ni yoru toukei-teki yosoku, Springer Japan (2007)
	on to statistical machine learning (1 session and unsupervised learning with regards to r			[Study outside of class (preparation and review)]
Professor: K	lo Nishino)	c	* 5 5	Students must work on reports and assignments that involve programming.
	d learning (6 sessions): In relation to supe volving the least squares method (1 session			(Other information (office hours, etc.))
	in involving support vector machines (1 se			Separate feedback time is provided after all lectures.
	zation problems with gradient methods us			* For details on office hours, please check KULASIS.
centered on c	erceptrons and the backpropagation learning convolutional networks (1 session), and pr			*Please visit KULASIS to find out about office hours.
	ofessor: Ko Nishino) ised learning and statistical inference (4 s	essions): In terms of uns	upervised learning, students	Courses delivered by instructors with practical work experience1
re taugĥt bas	sic ideas based on the statistical inference	performed via probabili	stic models (1 session),	[Courses delivered by instructors with practical work experience] (1) Category
	dels and the inference of the maximum lil cations of image processing, etc (1 session			A course with practical content delivered by instructors with practical work experience
utonomous f	ment learning and exploration (3 sessions form of control learning based on rewards g (1 session), formulation via probability a	s, students are taught abo	out derivation from dynamic	(2) Details of instructors' practical work experience related to the course
ilso taught th • Applicatio	It learning, which has been applied more the bandit problem (exploration problem). on of machine learning in artificial intellig arding the application of machine learning	(Professor: Shin Ishii) gence (1 session): Studen	its are informed about the latest	(3) Details of practical classes delivered based on instructors' practical work experience
		Conti	nue to 機械学習(2) ↓ ↓ ↓	
		Conti	nue to 機械学習(2)↓↓↓	
		Conti	nue to 機械学習(2)↓↓↓ ̄	
		Conti	nue to 機械学習(2)↓↓↓ ̄	
		Conti	nue to 機械学習(2)↓↓↓	
Course num	mber U-ENG26 46997 GB72	Conti	nue to 機械学習(2)↓↓↓	未更新 Course number U-ENG29 29030 LJ10
Course nur Course title	mber U-ENG26 46997 GB72	Instructor's	nue to 機械学習(2)↓↓↓	

ר ר

title in English)		duation Thesis	5			and	departn ffiliation	nent	ALL STAFF	hool of Engineering
arget yea	r	4th year students o	or above	Number of	of cred	its	6	Year	r/semesters	2021/Intensive, year-round
Days and peri	ods	Intensive	Class	s style	Semina	ır			Language of instruction	Japanese
		d purpose o								
電気電子工	学に	ニ関連するテ・	ーマは	こついて研	究を進る	め、	学士論	(文を	作成する。	
[Course o	bjed	ctives]								
		引する議論・ 弱的・技術的								などの研究能力を得る
	- J - M	101.101	144	こり力和田平に口化	990				コ ン HE/J/2 li	∘ ۵°, ۲۵۱
[Course s	che	dule and co	ntent	s]						
		もして決める。 コマ程度のゼ) 비 1 미 1	L の/田	Jul an	19月1日日 1-14	×∋.+.+.a	15	
別えは、迴	12 -	「マ程度のセ	38,	週1回以	上の面	5IJ <i>0</i>)) 課題 忖	副な	٤.	
[Course re		-								
		lするために 着たしていな				辰軍	(電子工	.学科	特別研究細則	1)(入学年度ごとに規
c/ Ogli	C 10		.,		0					
[Evaluatio	on m	ethods and	polic	>y]						
										総合的に評価する。
よね、子工	調义	ての作成にあ	12つ (しは子工論	又作成	現正	に化り	C 8 .	2	
Textbook	(s]									
Not used										
[Referenc	es,	etc.]			_					
Refere						_				
学士論文作	版艿	記定および手	引を曹	己付する。						
[Study ou	tsid	e of class (p	orepa	ration and	d reviev	N)]				
		いて自主的			が求め	られ	る。			
		nation (offic								
Please visit	t KU	LASIS to find	l out a	bout office	hours.					

	グラフ Graph 1	理論(電 Theory	気電	F)		nam and	ructor's ne, job ti departn ffiliation	tle, nent		for Computing and Media S sor,MIYAZAKI SHIYUU
Target yea	• Brd y	ear students	or above	Numbe	r of cred	lits	2	Year	/semesters	2021/Second seme
Days and perio	ds Thu.	4	Class	s style	Lectur	e			Language of instruction	Japanese
[Overview		-			-					
We learn bas problems.	ic theor	ies of gra	aphs an	d their ap	plication	s, an	d funda	menta	algorithms f	or solving graph
[Course ol	ojectiv	es]								
			earn ba	sic theori	ies of grap	ohs a	nd their	r appli	cations, and f	undamental algorithi
for solving g	raph pro	obiems.								
[Course so 1. Foundatio				-						
and their cor 2. Minimum Kruskal's a 3. Shortest p Dijkstra's a	spannir lgorithr ath prob	ng trees (1 n, Prim's blems (1 t	algorit	hm, Steir	ier tree pr	oble	m.			
4. Eurer circ Eurer circu	uits and	Hamilto				Ore's	theore	m.		
5. Graph col Vertex col				. Brooks's	s theorem	, Viz	ting's th	ieorem	, Konig's theo	orem. Coloring maps
6. Maximum Ford-Fulke				slots)						
 Matching Matchings 			partite	matching	s. Hall's t	heore	em, Hu	ngaria	n method.	
8. Exam (1 t	meslot)									

グラフ理論(電気電	(子) (2)
[Course requireme	
	data structures, and set theory.
Busies of algorithms, (auta structures, and set theory.
[Evaluation metho	
Mainly evaluated by the considered.	he final exam. In some cases, exercises or the number of attendance to the class may be
[Textbooks]	
宮崎修一 『グラフ理 85281-5(Written in 】	‼論入門 〜基本とアルゴリズム〜』(森北出版株式会社)ISBN:978-4-627- Japanese)
[References, etc.]	
(Reference book	(s)
	ommended books in class.
[Study outside of	class (preparation and review)]
Reading the textbook	is effective for study. Due to time constraints, I do not give complete description of the
proofs in class. I stror	ngly recommend do it by yourself after the class.
	n (office hours, etc.))
*Please visit KULASI	S to find out about office hours.