Akashi College	Electrical and Computer Engineering Electrical Engineering Course	Year	2021

Department Goals

Course Category		Course Title	Course Code	Credit Type	Credits	Class Hours per Week — 1st Year 1Q	2Q	3Q	4Q	2nd Year 1Q	2Q	3Q	4Q	3rd Year 1Q	2Q	3Q	4Q	4th Year 1Q	2Q	3Q	4Q	5th Year 1Q	2Q	3Q	4Q	Instructor	Division in Learning
General	Compulsory	Japanese IV	0001	Academic Credit	2													2								ZENTOH Masashi	
General	Compulsory	Physical Education IV	0002	School Credit	2													2	2							ISHIDA Masami,MAEDA Tadanori	
General	Compulsory	English IV A	0003	School Credit	1														2							INOUE Hidetoshi	
General	Compulsory	English IV B	0004	School Credit	1													2								AKIMOTO Hiromi	
General	Compulsory	English Conversation II	0005	School Credit	1														2							HERBERT John C.	
General	Elective	Chinese	0006	School Credit	2													2	2							ARIKAWA Kei	
General	Elective	German	0007	School Credit	2													2	2							YOKOTA Kazuya	
General	Elective	French	0008	School Credit	2													2	2							FUJIMOTO Tomonari,TAKEUCHI Ekuko	
General	Elective	Mathematical Concepts	0009	School Credit	1														2							MATSUMIYA Atusi	
General	Elective	Overseas Training Ⅱ	0010	School Credit	1													1	1							All faculty of the department	
General	Compulsory	Japanese IV	0029	School Credit	2													2	2							KANEKO Akemi	
Specialized	Compulsory	Ｃｏ＋ｗｏｒｋⅢA	0011	School Credit	1													2								All faculty	
Specialized	Compulsory	Ｃｏ＋ｗｏｒｋⅢB	0012	School Credit	1														2							All faculty	
Specialized	Compulsory	Applied Physics I	0013	School Credit	1													2								OGASAWARA Hiromichi	

Specialized	Compulsory/Elective	Course Title	Code	Credit Type	Credits	Schedule	Instructor
Specialized	Compulsory	Applied Physics II	0014	School Credit	1	2	OGASAWARA Hiromichi
Specialized	Compulsory	Transient Analysis on Electric Circuits	0015	School Credit	1	2	SUYAMA Taikei
Specialized	Compulsory	Electronic Circuits I	0016	School Credit	1	2	OHMUKAI Masato
Specialized	Compulsory	Electronic Circuits II	0017	School Credit	1	2	OHMUKAI Masato
Specialized	Compulsory	Control Engineering I	0018	Academic Credit	2	2	KAMI Yasushi
Specialized	Compulsory	Preliminaries to Graduation Thesis	0019	School Credit	1	2	All faculty of the department
Specialized	Compulsory	Applied Mathematics	0020	School Credit	4	4 4	OGASAWARA Hiromichi
Specialized	Compulsory	Electromagnetics II	0021	School Credit	2	2 2	OHMUKAI Masato
Specialized	Compulsory	Solid State Physics A	0022	Academic Credit	2	2	OHMUKAI Masato
Specialized	Compulsory	Experiments of Electrical Engineering I	0023	School Credit	4	4 4	KAMI Yasushi,HIROTA Atsushi,TERASAWA Shinichi,HIRANO Masatsugu,NOMURA Hayato
Specialized	Elective	Off-Campus Practical Training A	0024	School Credit	1	1 1	All faculty of the department
Specialized	Elective	Off-Campus Practical Training B	0025	School Credit	2	2 2	All faculty of the department
Specialized	Compulsory	Solid State Physics B	0026	Academic Credit	2	2	OHMUKAI Masato
Specialized	Elective	Computer Architecture	0027	Academic Credit	2	2	NOMURA Hayato
Specialized	Elective	Discrete Mathematics	0028	School Credit	2	2 2	HAMADA Yukihiro

Group	Type	Course	Code	Credit	Credits	Grid values	Instructor
General	Compulsory	English Ⅴ	0030	Academic Credit	2	2	MATSUDA Yasutaka
General	Elective	Introduction to Japanese Language and Communication	0031	Academic Credit	2	2	ZENTOH Masashi
General	Elective	Law	0032	Academic Credit	2	2	KUROKUI Yoshimi
General	Elective	Philosophy	0033	Academic Credit	2	2	HATTORI Keisuke
General	Elective	Biophysical Chemistry	0034	School Credit	1	2	OGASAWARA Hiromichi
General	Elective	Scientific Technology and the Environment	0035	School Credit	1	2	INOUE Naoyuki
General	Elective	Sports Science Ⅰ	0036	School Credit	1	2	MAEDA Tadanori,KOBAYASHI Yuki
General	Elective	Sports Science Ⅱ	0037	School Credit	1	2	GOTOH Takayuki,MAEDA Tadanori
General	Elective	ＴＯＥＩＣⅠ	0038	School Credit	1	1　1	MATSUDA Yasutaka,KITAGAWA Chiho
General	Elective	ＴＯＥＩＣⅡ	0039	School Credit	2	2　2	MATSUDA Yasutaka,KITAGAWA Chiho
General	Elective	ＴＯＥＩＣⅢ	0040	School Credit	3	3　3	MATSUDA Yasutaka,KITAGAWA Chiho
General	Elective	Overseas Training Ⅲ	0041	School Credit	1	1　1	All faculty of the department
Specialized	Compulsory	Intellectual Property Rights	0042	School Credit	1	2	MORISADA Yuji
Specialized	Compulsory	Graduation Thesis	0043	School Credit	9	6　12	All faculty of the department
Specialized	Compulsory	Power Electronics	0044	School Credit	1	2	HIROTA Atsushi
Specialized	Compulsory	Solid State Physics C	0045	School Credit	1	2	OHMUKAI Masato

Category	Type	Course	Code	Credit	Credits	Schedule	Instructor
Specialized	Compulsory	Experiments of Electrical Engineering II	0046	School Credit	2	4	KAMI Yasushi
Specialized	Elective	Probability and Statistics	0047	Academic Credit	2	2	HAMADA Yukihiro
Specialized	Elective	Information Theory	0048	School Credit	1	2	NAKAI Yuichi
Specialized	Elective	Fundamentals of Communication Systems	0049	Academic Credit	2	2	TAKITA Makoto
Specialized	Elective	Communication System	0050	School Credit	1	2	TAKITA Makoto
Specialized	Elective	Information Network	0051	School Credit	1	2	INOUE Kazunari
Specialized	Elective	Control Engineering II	0052	School Credit	1	2	KAMI Yasushi
Specialized	Elective	Engineering of Energy Conversion	0053	School Credit	1	2	FUJII Haruhisa
Specialized	Elective	Energy Transmission and Distribution Engineering	0054	School Credit	1	2	KONO Yoshiyuki
Specialized	Elective	Application of Electronics	0055	School Credit	1	2	INOUE Kazunari
Specialized	Elective	Image Engineering	0056	Academic Credit	2	2	NAKAI Yuichi
Specialized	Elective	Computer Simulation	0057	Academic Credit	2	2	KAMI Yasushi
Specialized	Elective	Qualifications in Electric and Electronic Engineering I	0058	School Credit	1	1 1	OHMUKAI Masato
Specialized	Elective	Qualifications in Electric and Electronic Engineering II	0059	School Credit	1	1 1	OHMUKAI Masato

Akashi College		Year	2021		Course Title	Japanese IV

Course Information

Course Code	0001		Course Category	General / Compulsory
Class Format	Lecture		Credits	Academic Credit: 2
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	4th
Term	First Semester		Classes per Week	2
Textbook and/or Teaching Materials	野田尚史・森口稔著：日本語を話すトレーニング（ひつじ書房）			
Instructor	ZENTOH Masashi			

Course Objectives

1) Can write up reports and theses based on organized information, and can devise logical structure and development so that their arguments are conveyed effectively.
2) Can present the content of the reports and theses they wrote up, as well as their thoughts and ideas, orally and accurately.
3) Can discuss on the issue based on rationale.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Can create an easy-to-understand, logical, and empirical resume with excellent layout design based on clear conclusions, opinions, and reports.	Can create an easy-to-understand, logical, and empirical resume based on clear conclusions, opinions, and reports.	There are elements that indicate conclusion, opinions, and reports, but the structure and layout design are inadequate.
Achievement 2	Can give a presentation with excellent gesture, speed, and comprehensibility, and can response to questions accurately.	Can give a rehearsed presentation, but cannot immediately answer questions appropriately.	The presentation is almost like a script reading.
Achievement 3	Can make a meaningful statement in line with the theme in a concise, logical, and empirical way.	Can make a meaningful statement that's relevant to the theme, but is redundant.	Can make a statement that's relevant to the theme, but is unorganized.

Assigned Department Objectives

学習・教育到達度目標 (A) 学習・教育到達度目標 (E)

Teaching Method

Outline	Classes will be conducted with a focus on students' presentations following text questions and Q&A sessions on the presentations. The goal of the course is to cover various issues in different situations where we use Japanese, and learn about the characteristics of Japanese expressions and thoughts of Japanese people through organizing knowledge, spontaneous observation, and appropriate implementation.
Style	Classes will be held in a lecture style. Classes mainly involve students' presentations (using A4 one-page resumes) and Q&A sessions, and are intended to help students understand each theme and acquire presentation skills. Contact: Masashi Zemitou and Masahiro Takeuchi
Notice	This course's content will amount to 90 hours of study in total. These hours include the learning time guaranteed in classes and the standard self-study time required for pre-study / review, and completing assignment reports. Students should be active in presentations and Q&A sessions, including pre-study, to ensure they learn the knowledge and skills necessary to express in Japanese language. There will be handouts as necessary, and quizzes. Students who miss 1/3 or more of classes will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Orientation Course outline Planning for the presentation	Understand how to create a resume, presentation notes, and the respective evaluation criteria.
		2nd	Make an inquiry Training 1 presentations and Q&A Insight and organization of the above issues	Understand the theme of "Inquiry," and can create and present a resume with a focus on the necessary tactics (speech, 5W2H, timing, etc.).
		3rd	Make a request Training 3 presentations and Q&A Insight and organization of the above issues	Understand the theme of "Request," and can create and present a resume with a focus on the necessary tactics (attention, timing, speech, etc.).
		4th	Invite / Decline / Apologize Training 5 presentations and Q&A Insight and organization of the above issues	Understand the theme related to consideration for others and can create and present a resume with a focus the necessary tactics (attention, timing, speech, etc.).
		5th	Interview Training 7 presentations and Q&A Insight and organization of the above issues	Understand the theme of "Interview," and can create and present a resume with a focus on the necessary tactics (preparation, target selection, way of speaking, etc.).
		6th	Give a speech Training 9 presentations and Q&A Insight and organization of the above issues	Understand the theme of "Speech," and can create and present a resume with a focus on the necessary tactics (appropriate content and way of speaking).

		7th	Speak in a meeting Training 10 presentations and Q&A Insight and organization of the above issues	Understand the theme of "Speak in a meeting," and can create and present a resume with a focus on the necessary tactics (such as how to organize opinions, deciding and progressing meetings).
		8th	Midterm exam	
	2nd Quarter	9th	Research for themed research by subjects 1 Case studies of cases that are closely related to students	Can discuss on case studies by theme.
		10th	Simple Japanese Training 12 presentations and Q&A Insight and organization of the above issues	Understand the theme of "Simple Japanese," and can create and present a resume with a focus on the necessary tactics (word selection, cross-cultural understanding, manners, etc.).
		11th	Give directions and information on transportation / Explain steps Training 6 and 11 presentations and Q&A Insight and organization of the above issues	Understand the theme of "Give directions and information on transportation" and "Explain steps," and can create and present a resume with a focus on the necessary tactics (such as how to organize and explain the content).
		12th	Presentation 1 Training 13 presentations and Q&A Insight and organization of the above issues	Understand the theme of "Research presentation," and can create and present a resume with a focus on the necessary tactics (material selection, documents creation, etc.).
		13th	Research Presentation 2 Training 14 presentations and Q&A Insight and organization of the above issues	Understand the theme of "Research presentation" and can create and present a resume with a focus on the necessary techniques (creating slides, questions responding, etc.).
		14th	Career interview 1 Training 15 presentations and Q&A Insight and organization of the above issues	Understand the theme of "Career interview" and can create and present a resume with a focus on the necessary tactics (question intention, criteria by job type, and how to introduce yourself, etc.).
		15th	Career interview 2 Training 15 presentations and Q&A Insight and organization of the above issues	Understand the theme of "Career interview" and can create and present a resume with a focus on the necessary tactics (motivation letters, self-promotion through questions, etc.).
		16th	Final exam	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	50	50	0	0	0	0	100
Basic Proficiency	50	50	0	0	0	0	100
Specialized Proficiency	0	0	0	0	0	0	0
Cross Area Proficiency	0	0	0	0	0	0	0

Akashi College		Year	2021		Course Title	Physical Education IV

Course Information

Course Code	0002		Course Category	General / Compulsory
Class Format	Skill		Credits	School Credit: 2
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	4th
Term	Year-round		Classes per Week	2
Textbook and/or Teaching Materials				
Instructor	ISHIDA Masami,MAEDA Tadanori			

Course Objectives

・ Participate in classes to improve students' own health and physical strength. Also, have some level of self-discipline.
・ Can take action to conduct sports safely. Also, recognizes the significance of collaborating and cooperating with the team and can take the necessary action to do so.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Actively participate in classes to improve their health and physical strength. Have a high level of self-discipline.	Participate in classes to improve their health and physical strength. Have some level of self-discipline.	Reluctant to participate in classes, or improve their own health and physical strength. Do not have a high level of self-discipline.
Achievement 2	Do not participate in classes. Do not strive to improve their health and physical strength. Have a poor level of self-discipline.	Actively participate in various sport practices and games, and are very competitive. Also have a great influence on games, etc.	Can actively participate in various sport practices and games. And also have the skills for them.
Achievement 3	Can participate in various sport practices and games.	Do not participate in various sport practices and games.	Understand the role of a leader well, and can help increase teamwork.
	Understand and can play or take on the role of a leader.	Understand the role of a leader, but cannot play that role.	Do not understand the role of a leader. Also, never play that role.

Assigned Department Objectives

学習・教育到達度目標 (A) 学習・教育到達度目標 (B)

Teaching Method

Outline	The goal of this course is for students to learn more about the fun and depth of sports so that they can build the habit of playing sports on a daily basis. This class requires an active and proactive attitude to participate. Students will split into groups and leaders will take the lead to plan, review, and implement the course content. Students can choose from: Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc
Style	Students are encouraged to improve their skills through games based on the rules, how to play games, and the basic skills they learned in previous years. They are also encouraged to experience the fun of enhancing teamwork while collaborating and cooperating with your team with your leader in the center. Students should take the initiative in creating a safe and welcoming class, and the instructors support their effort.
Notice	・ Wear training wear and athletic shoes. If students fail to wear them, points will be deducted from their grade. ・ Do not wear or bring accessories, watches, or any other unnecessary items. These are also eligible for grade deduction. ・ Tardiness will be excused for the first 20 minutes. Students can participate in the class after 20 minutes, but their attendance will be marked as absent. ・ If it is discovered that a student left class early without being excused (ditching class), their attendance for that class will be marked as absent, and their grade for previous classes will suffer a deduction equal to an absence. Students who miss 1/4 or more of classes will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Understand the purposes and objectives of this course. Split into teams in each sport and select a leader.
		2nd	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		3rd	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		4th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		5th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.

		6th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		7th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		8th	No midterm exam	
	2nd Quarter	9th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Split into teams in each sport and select a leader.
		10th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		11th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		12th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		13th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		14th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		15th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		16th	No final exam	
2nd Semester	3rd Quarter	1st	Practice for the sports games	Prepare and practice for so that they can hold the sports games safely.
		2nd	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Split into teams in each sport and select a leader.
		3rd	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		4th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		5th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		6th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		7th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		8th	No midterm exam	
	4th Quarter	9th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Split into teams in each sport and select a leader.
		10th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		11th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		12th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		13th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		14th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		15th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		16th	No final exam	

Evaluation Method and Weight (%)

	Approach to a class	Practical skill	Leadership	Total
Subtotal	75	10	15	100
Basic Proficiency	75	0	0	75
Specialized Proficiency	0	0	0	0
Cross Area Proficiency	0	10	15	25

Akashi College		Year	2021		Course Title	English IV A

Course Information

Course Code	0003		Course Category	General / Compulsory
Class Format	Lecture		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	4th
Term	Second Semester		Classes per Week	2
Textbook and/or Teaching Materials	(1) 亀山太一（他）「Fundamental Science in English」SEIBIDO. (2) 刀祢雅彦「データベース4500完成英単語・熟語」桐原書店. (3) 瓜生豊・篠田重晃「Next Stage 英文法・語法問題」桐原書店.			
Instructor	INOUE Hidetoshi			

Course Objectives

１）既習の高等学校学習指導要領に準じた新出語彙を習得して適切に運用できる。
２）既習の高等学校学習指導要領に準じた文法を習得して適切に運用できる。
３）既習の高等学校学習指導要領に準じた文構造を習得して適切に運用できる。
４）平易な英語で書かれた文章を読み、その概要を把握し必要な情報を読み取ることができる。
５）明瞭で聞き手に伝わるような発話ができるよう、英語の発音・アクセントの規則を習得して適切に運用できる。

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目1	高等学校学習指導要領に準じた新出語彙を十分に習得して適切に運用できる。	高等学校学習指導要領に準じた新出語彙を習得して運用できる。	高等学校学習指導要領に準じた新出語彙を習得していない。
評価項目2	高等学校学習指導要領に準じた文法や文構造を十分に習得して適切に運用できる。	高等学校学習指導要領に準じた文法や文構造を習得して運用できる。	高等学校学習指導要領に準じた文法や文構造を習得していない。
評価項目3	高等学校学習指導要領に準じた文構造を十分に習得して適切に運用できる。	高等学校学習指導要領に準じた文構造を習得して適切に運用できる。	高等学校学習指導要領に準じた文構造を習得していない。
評価項目4	平易な英語で書かれた文章を読み、その概要を十分に把握し必要な情報を読み取ることができる。	平易な英語で書かれた文章を読み、その概要を把握し必要な情報を読み取ることができる。	平易な英語で書かれた文章を読み、その概要を把握できない。
評価項目5	英語の発音・アクセントの規則を十分に習得して適切に運用できる。	英語の発音・アクセントの規則を習得して適切に運用できる。	英語の発音・アクセントの規則を習得していない。

Assigned Department Objectives

学習・教育到達度目標 (A) 学習・教育到達度目標 (B) 学習・教育到達度目標 (E)

Teaching Method

Outline	(1) 国際化時代に活躍する技術者として必要な英語の基礎能力を身につけるために、特に「読む・書く」技能を涵養する。 (2) 理工系学生のために編集された英文を題材とすることにより、実践的な英語運用能力の向上を目指す。
Style	目標を達成するためには、次の自己学習が必要である。 ・英単語帳の新出単語について、該当単語、発音のみでなく、用いられている例文も産出可能とすること。 ・授業において学習した英文を復習し、復唱可能な状態になるまで練習すること。
Notice	(1) 小テストは語彙を増やし、英作文力向上のための良い機会として、十分に活用すること。 (2) 理由なき遅刻や欠課による小テストの未受験は 0 点の扱いとする。 合格の対象としない欠席条件(割合) 1/4以上の欠課

Characteristics of Class / Division in Learning

☐ Active Learning	☑ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	授業のガイダンス 授業の進め方・単語テスト・評価の方法などについて説明を行う。	
		2nd	Lesson 1. Numbers and Calculation	数と計算に関する英語を習得する。
		3rd	Lesson 2. Figures P1/P2	図形に関する英語を習得する。
		4th	Lesson 2. Figures P3/P4	図形に関する英語を習得する。
		5th	Lesson 2. Figures P5	図形に関する英語を習得する。
		6th	Lesson 3. States of Substance P1	物質の状態に関する英語を習得する。
		7th	Lesson 3. States of Substance P2	物質の状態に関する英語を習得する。
		8th	中間試験 中間試験を実施する。	
	4th Quarter	9th	中間試験の返却と解説 中間試験の返却と解説を行う。	特に不正解の箇所を再学習し理解する。
		10th	Lesson 3. States of Substance P3	物質の状態に関する英語を習得する。
		11th	Lesson 4. Graph and Functions P1	グラフと関数に関する英語を習得する。
		12th	Lesson 4. Graph and Functions P2	グラフと関数に関する英語を習得する。
		13th	Lesson 4. Graph and Functions P3	グラフと関数に関する英語を習得する。
		14th	Lesson 6. Electricity P1	電気・電子に関する英語を習得する。
		15th	Lesson 6. Electricity P2	電気・電子に関する英語を習得する。
		16th	期末試験	

Evaluation Method and Weight (%)

	試験	小テスト	その他	Total
Subtotal	70	30	0	100
基礎的能力	70	30	0	100
専門的能力	0	0	0	0
分野横断的能力	0	0	0	0

	試験	小テスト	その他	Total
Subtotal	70	30	0	100
基礎的能力	70	30	0	100
専門的能力				
分野横断的能力				

Akashi College	Year	2021		Course Title	English IV B

Course Information

Course Code	0004		Course Category	General / Compulsory
Class Format	Lecture		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	4th
Term	First Semester		Classes per Week	2
Textbook and/or Teaching Materials	(1)TOEIC L&R Test (2) American Society in Focus (3) DataBase (4) NextStage			
Instructor	AKIMOTO Hiromi			

Course Objectives

(1) Improve the English listening and reading skills: Improve practical English proficiency through listening and reading exercises in TOEIC materials.
(2) Improve English vocabulary and grammar: Retain basic English skills through learning English words and grammatical elements.
(3) Understand culture and history of English-speaking countries   Gain a deeper understanding of American social issues and modern history using videos.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Can fully improve practical English proficiency through listening and reading exercises.	Can improve practical English proficiency through listening and reading exercises.	Cannot improve practical English proficiency through listening and reading exercises.
Achievement 2	Can fully improve English vocabulary through learning English vocabulary.	Can improve English vocabulary through learning English vocabulary.	Cannot improve English vocabulary through learning English vocabulary.
Achievement 3	Fully learn a wide range of knowledge and skills, including the logical thinking and international perspective necessary for future engineers.	Learn a wide range of knowledge and skills, including the logical thinking and international perspective necessary for future engineers.	Do not learn a wide range of knowledge and skills, including the logical thinking and international perspective necessary for future engineers.

Assigned Department Objectives

学習・教育到達度目標 (A) 学習・教育到達度目標 (B) 学習・教育到達度目標 (E)

Teaching Method

Outline	(1) The aim is to improve practical English proficiency through TOEIC exercises. (2) Comprehend information from videos and authentic materials and link it to oral speech in English.
Style	There will be vocabulary tests. Lessons explain the key points in the textbook and do practice questions for each unit.
Notice	Students who miss 1/4 or more of classes will not be eligible for a passing grade. Course schedule will be provided in the first week. Be sure to understand in detail.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Class guidance Explain how classes will be conducted, vocabulary quizzes, assignments grading system, etc.	Gain a proper understanding on the class content and assignments, and plan ahead.
		2nd	(1) Day 1: Part 1 (2) Unit 2: Learn listening and reading on the topics.	Watch a video that follow the topics of the textbook to gain a deeper understanding of American culture.
		3rd	(1) Day 2: Part 1 (2) Unit 3: Learn listening and reading on the topics.	Improve vocabulary, grammar, and listening and reading skills following the topics of the textbook.
		4th	(1) Day 3: Part 2 Learn culture of English-speaking countries with videos	Improve vocabulary, grammar, and listening and reading skills following the topics of the textbook.
		5th	(1) Day 4: Part 2 (2) Unit 6: Learn listening and reading on the topics.	Improve vocabulary, grammar, and listening and reading skills following the topics of the textbook.
		6th	(1) Day 5: Part 3 (2) Unit 8: Learn listening and reading on the topics.	Improve vocabulary, grammar, and listening and reading skills following the topics of the textbook.
		7th	(1) Day 6: Part 3 Q&A for the midterm exam	Reflect on the class content so far, and review and answer to questions for the periodic exam.
		8th	Midterm exam Take the midterm exam.	Test their understanding of the class content so far.
	2nd Quarter	9th	(1) Day 7: Part 4 Returning and explanation of the midterm exam	Aim to identify and overcome weaknesses.
		10th	(1) Day 8: Part 4 (2) Unit 9: Learn listening and reading on the topics.	Watch a video to gain a deeper understanding of culture of English-speaking countries.

		11th	(1) Day 9: Part 5 (2) Unit 10: Learn listening and reading on the topics.	Improve vocabulary, grammar, and listening and reading skills following the topics of the textbook.
		12th	(1) Day 10: Part 5 Learn culture of English-speaking countries with videos	Improve vocabulary, grammar, and listening and reading skills following the topics of the textbook.
		13th	(1) Day 11: Part 6 (2) Unit 12: Learn listening and reading on the topics.	Improve vocabulary, grammar, and listening and reading skills following the topics of the textbook.
		14th	(1) Day 12: Part 6 Applied questions Learn culture of English-speaking countries with videos	Improve vocabulary, grammar, and listening and reading skills following the topics of the textbook.
		15th	(1) Day 13: Part 7 Practice questions Q&A for the final exam	Reflect on the class content so far, and review and answer to questions for the periodic exam.
		16th	Final exam	Test their understanding of the class content so far.

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Quizes	Total
Subtotal	50	0	0	0	0	50	100
Basic Proficiency	50	0	0	0	0	50	100
Specialized Proficiency	0	0	0	0	0	0	0
Cross Area Proficiency	0	0	0	0	0	0	0

Akashi College		Year	2021		Course Title	English Conversation II

Course Information

Course Code	0005	Course Category	General / Compulsory
Class Format	Lecture	Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course	Student Grade	4th
Term	Second Semester	Classes per Week	2
Textbook and/or Teaching Materials	Interchange Level 3 (5th Edition) Student's Book B with Online Self-Study by Jack C. Richards, Jonathan Hull, and Susan Proctor (2017) Cambridge University Press.		
Instructor	HERBERT John C.		

Course Objectives

1) 聞き手に伝わるよう、句・文における基本的なリズムやイントネーション、音のつながりに配慮して、音読あるいは発話できる。
2) 明瞭で聞き手に伝わるような発話ができるよう、英語の発音・アクセントの規則を習得して適切に運用できる。
3) 中学で既習の語彙の定着を図り、高等学校学習指導要領に準じた新出語彙、及び専門教育に必要となる英語専門用語を習得して適切に運用できる。
4) 中学で既習の文法や文構造に加え、高等学校学習指導要領に準じた文法や文構造を習得して適切に運用できる。
5) 日常生活や身近な話題に関して、毎分100語程度の速度ではっきりとした発音で話された内容から必要な情報を聞きとることができる。
6) 日常生活や身近な話題に関して、自分の意見や感想を基本的な表現を用いて英語で話すことができる。
7) 説明や物語などの文章を毎分100語程度の速度で聞き手に伝わるように音読ができる。

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目1 発音	Clear pronunciation and natural intonation	Understandable pronunciation and recognizable intonation	Poor pronunciation using only Japanese katakana to try to speak English and flat intonation
評価項目2 発音	Natural accent, stress, and rhythm	Understandable accent, stress, and rhythm	Incomprehensible accent, stress, rhythm
評価項目3 語彙	Mastery of all textbook vocabulary	Mastery of most of the textbook vocabulary which the teacher focused on in class lectures	Mastery of only a few of the textbook vocabulary which the teacher focused on in class lectures
評価項目4 文法及び構文	Mastery of all the grammar from the textbook and from the teacher's lectures	Mastery of most of the grammar from the textbook and from the teacher's lectures	Mastery of only some of the grammar from the textbook and from the teacher's lectures
評価項目5 英語コミュニケーション	Able to maintain a basic conversation fluently	Able to maintain a basic conversation somewhat fluently	Not able to maintain a basic conversation
評価項目6 英語コミュニケーション	Able to express opinions in English clearly	Able to express opinions in English somewhat clearly	Not able to express opinions in English
評価項目7 英語コミュニケーション	Able to explain ideas fluently in English	Able to explain ideas somewhat fluently in English	Not able to explain ideas in English

Assigned Department Objectives

学習・教育到達度目標 (A) 学習・教育到達度目標 (B) 学習・教育到達度目標 (E)

Teaching Method

Outline	This course focuses on English conversation practice and confidence building. Students will make the English they have learned from previous classes come alive in its spoken form.
Style	Each lesson will involve plenty of conversation practice with a different theme and grammar point each week. This course also includes listening and pronunciation practice in English. Written tests will be given as mid-term and final exams and speaking tests will be held during class time on a regular basis.
Notice	このコースを成果とともに修了するには、学生の積極的な授業参加が欠かせない。このコースの履修中、15分以上の遅刻、他クラスの学習(いわゆる内職)をする、居眠りをする、私語を続ける、スマホゲームをする、あるいは他の学生の注意力を削ぐような、これらに類する行為が続く場合、クラス履修とみなさないことがあり、また、補修を必須とすることがある。 合格の対象としない欠席条件(割合) 1/4以上の欠課

Characteristics of Class / Division in Learning

☑ Active Learning	☑ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Unit 9: Getting Things Done (A) Practice listening and speaking activities using "get (something) done" and "have (something) done." Record Speaking Test 1: "Getting Things Done" Homework: Section 9 Grammar Focus on pages 61 and 140-Part 2.	Hold a fluent conversation in English about things you need or want to have done.
		2nd	Unit 9: Getting Things Done (B) Practice listening and speaking activities for making suggestions with modals + verbs, gerunds, negative questions, and infinitives. Record Speaking Test 2: "Making Suggestions" Homework: Section 3 Grammar Focus on pages 65 and 141-Part 1.	Hold a fluent conversation in English in which you ask for and give advice or suggestions.

		3rd	Unit 10: A Matter of Time (A) Practice listening and speaking activities that refer to times in the past with adverbs and prepositions, "during," "in," "ago," "from . . . to," "for," and "since." Record Speaking Test 3: "Historic Events" Homework: Section 10 Grammar Focus on pages 67 and 141-Part 2.	Hold a fluent conversation in English about historic events.
		4th	Unit 10: A Matter of Time (B) Practice listening and speaking activities while predicting the future with "will," the future continuous tense, and the future perfect tense. Record Speaking Test 4: "Predicting the Future" Homework: Section 3 Grammar Focus on pages 73 and 142-Part 1.	Hold a fluent conversation in English about the future.
		5th	Unit 11: Rites of Passage (A) Practice listening and speaking activities about life's milestones, which use the time clauses, "before," "after," "once," "the moment," "as soon as," "until," and "by the time." Record Speaking Test 5: "Life Events and Milestones" Homework: Section 8 Grammar Focus on pages 75 and 142-Part 2.	Hold a fluent conversation in English about life's milestones.
		6th	Unit 11: Rites of Passage (B) Practice listening and speaking activities for describing hypothetical situations and expressing regret with "should (not) have" + past participle, "if" clauses + past perfect and "would/could have" + past participles. Record Speaking Test 6: "Regrets and Hypothetical Situations" Homework: Sections 4 and 8 Grammar Focus on pages 79, 81 and 143-Part 1 and 2.	Hold a fluent conversation in English about regrets and hypothetical situations.
		7th	Unit 12: Keys to Success Practice listening and speaking activities to describe purpose through infinitive clauses with "for" and reasons with "because," "since," "because of," "for," and "due to." Homework (this week): Study for the mid-term test. Record Speaking Test 7: "Keys to Success" Homework (due by week 9): Section 4 Grammar Focus on pages 87 and 144-Part 1.	Hold a fluent conversation in English about the qualities necessary for success and good advertising.
		8th	Mid-Term Written Test	Show mastery of the grammar and vocabulary covered in Units 9 to 12.
	4th Quarter	9th	Unit 13: What Might Have Been (A) Practice listening and speaking activities for speculating what has happened by using past modals for degrees of certainty: "must (not) have," "may (not) have," "might (not) have," and "could (not) have." Record Speaking Test 8: "Unexplained Events" Homework: Section 9 Grammar Focus on pages 89 and 144-Part 2.	Hold a fluent conversation in English to speculate why things happened as they did.
		10th	Unit 13: What Might Have Been (B) Practice listening and speaking activities for giving advice with, "should (not) have," "could (not) have," and "would (not) have." Record Speaking Test 9: "Complicated Situations and Advice" Homework: Section 3 Grammar Focus on pages 93 and 145-Part 1.	Hold a fluent conversation in English about complicated situations and advice.
		11th	Unit 14: Creative Careers (A) Practice listening and speaking activities for describing processes with "is/are" + past participles and modals + be + past participles. Record Speaking Test 10: "How Things are Done/Made" Homework: Section 10 Grammar Focus on pages 96 and 145-Part 2.	Hold a fluent conversation in English about how things are done or made.
		12th	Unit 14: Creative Careers (B) Practice listening and speaking activities to talk about careers in entertainment by using defining and non-defining relative clauses. Record Speaking Test 11: "Media and Entertainment" Homework: Section 3 Grammar Focus on pages 101 and 146-Part 1.	Hold a fluent conversation in English about media and entertainment.
		13th	Unit 15: A Law Must Be Passed! (A) Practice listening and speaking activities for giving recommendations and opinions about controversial topics with passive modals, like "should be," "ought to be," "must be," "has to be," and "has got to be." Record Speaking Test 12: "Recommendations" Homework: Section 9 Grammar Focus on pages 103 and 146-Part 2.	Hold a fluent conversation in English regarding recommendations and opinions about controversial topics.

		14th	Unit 15: A Law Must Be Passed! (B) Practice listening and speaking activities to show agreement and disagreement with tag questions. Record Speaking Test 13: "Controversial Opinions" Homework: Section 3 and 9 Grammar Focus on pages 107, 109, and 147-Part 1 and 2.	Hold a fluent conversation in English with tag questions.
		15th	Unit 16: Reaching Our Goals Practice listening and speaking activities regarding accomplishments with the simple past and present perfect, and regarding goals with the future perfect and "would like to have" + past participles. Record Speaking Test 14: "Inspiration" Homework: Study for the final exam. Recommendation: Complete Online Self-Study Units 9-16 grammar and vocabulary sections.	Hold a fluent conversation in English about reaching one's goals.
		16th	Final Exam	Show mastery of the grammar and vocabulary covered in Units 9 to 16.

Evaluation Method and Weight (%)

	Speaking Tests	Written Tests	Homework/Quizzes	Total
Subtotal	60	20	20	100
Basic English Communication	60	20	20	100

Akashi College		Year	2021		Course Title	Chinese

Course Information

Course Code	0006		Course Category	General / Elective
Class Format	Lecture		Credits	School Credit: 2
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	4th
Term	Year-round		Classes per Week	2
Textbook and/or Teaching Materials	虞萍：「ペアで学ぼう！中国語」朝日出版社.			
Instructor	ARIKAWA Kei			

Course Objectives

①中国語の発音をマスターし、基礎的な語彙と文法の規則を応用できるようにし、会話力と読解力を養うように目指します。
②挨拶や日常会話など、身の回りの事を実用的な中国語で表現でき、簡単な中国語でコミュニケーションを取れることを目指します。
③中国人の考え方や生活習慣、中国文化に対する理解を深めていきます。

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目1	中国語の発音をマスターし、基礎的な語彙と文法の規則を応用できるようにし、会話力と読解力を十分に養っている。	中国語の発音をマスターし、基礎的な語彙と文法の規則を応用できるようにし、会話力と読解力を養っている。	中国語の発音をマスターし、基礎的な語彙と文法の規則を応用できるようにし、会話力と読解力を養えていない。
評価項目2	挨拶や日常会話など、身の回りの事を実用的な中国語で表現でき、簡単な中国語で十分にコミュニケーションを取ることができる。	挨拶や日常会話など、身の回りの事を実用的な中国語で表現でき、簡単な中国語でコミュニケーションを取ることができる。	挨拶や日常会話など、身の回りの事を実用的な中国語で表現でき、簡単な中国語でコミュニケーションを取ることができない。
評価項目3	中国人の考え方や生活習慣、中国文化に対する理解を十分深めている。	中国人の考え方や生活習慣、中国文化に対する理解を深めている。	中国人の考え方や生活習慣、中国文化に対する理解を深めていない。

Assigned Department Objectives

学習・教育到達度目標 (A) 学習・教育到達目標 (B)

Teaching Method

Outline	外国語の勉強に肝心なのは発音と言われています。中国語も例外ではありません。この授業では、発音を丁寧に学び、焦らずにしっかりとレベルアップを図りながら、「聞く」「話す」「読む」「書く」の能力をバランスよく身につけることを目指します。また、中国の社会や文化などにも触れながら、よりスムーズにコミュニケーションを取れるように異文化への理解も深めていきます。
Style	①事前に予習を行い、学習ポイント把握したうえで授業に臨むこと。 ②授業に積極的に参加すること。 ③発声練習、会話練習にしっかり取り組むこと。 ④予習時に生じた疑問や、授業中に理解できない事項は質問をすること。 連絡員：井上英俊
Notice	目標達成のため、次の自己学習が必要である。 ①学習ポイントを把握し授業の理解度を高めるため、予習を行うこと。 ②授業で学習した後に必ず復習を行うこと。 ③テキストの添付CDや音声ストリーミングURLを活用し、中国語の発音を自主的練習すること。 合格の対象としない欠席条件(割合) 1/4以上の欠課

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	発音1、2、3	声調、単母音、子音を学ぶ。
		2nd	発音4、5	複合母音、鼻音を伴う母音を学ぶ。
		3rd	第1課　あなたは日本人ですか？	人称代詞、名前の聞き方と答え方、動詞述語文を学ぶ。
		4th	第1課　文法のまとめ	練習Ⅰ、Ⅱを学ぶ。
		5th	第2課　あなたは何を学びますか？	「的」の使い方、副詞「也」、疑問詞「什么」を学ぶ。
		6th	第2課　文法のまとめ	練習Ⅰ、Ⅱを学ぶ。
		7th	第3課　あなたは最近どうですか？	形容詞述語文、「」＋動詞、副詞「都」を学ぶ。
		8th	復習と中間テスト	既習内容を復習する。
	2nd Quarter	9th	第3課　文法のまとめ	練習Ⅰ、Ⅱを学ぶ。
		10th	第4課　これはどなたの辞書ですか？	指示代詞、量詞、反復疑問文を学ぶ。
		11th	第4課　文法のまとめ	練習Ⅰ、Ⅱを学ぶ。
		12th	第5課　彼はいつ北京に来ますか？	時間の言い方、「……吧」の使い方、「去/来/回/到」＋場所＋動詞を学ぶ。
		13th	第5課　文法のまとめ	練習Ⅰ、Ⅱを学ぶ。
		14th	第6課　図書館はどこにありますか？	「有」と「在」、主述述語文、「几」と「多少」を学ぶ。
		15th	前期総まとめ	復習と質問応答を実施する。
		16th	期末試験	

2nd Semester	3rd Quarter	1st	前期内容の復習	前期の内容を復習する。
		2nd	第７課　あなたは紅茶を飲みますかそれとも緑茶を飲みますか？	A「是」B、「想」＋動詞/「要」＋動詞、比較の表現を学ぶ。
		3rd	第７課　文法のまとめ	練習Ⅰ、Ⅱを学ぶ。
		4th	第８課　あなたはどれが好きですか？	疑問詞「哪」、動詞の重ね型、主題化目的語を文頭に出す表現を学ぶ。
		5th	第８課　文法のまとめ	練習Ⅰ、Ⅱを学ぶ。
		6th	第９課　あなたは毎日何時間寝ますか？	期間〈時間量〉、様態補語を導く「得」、「怎么」を学ぶ。
		7th	第９課　文法のまとめ	練習Ⅰ、Ⅱを学ぶ。
		8th	復習と中間テスト	既習内容を復習する。
	4th Quarter	9th	第１０課　あなたはさっきどこに行きましたか？	過去の経験を表わす　動詞＋「」、「了」の使い方、「又」「再」「」を学ぶ。
		10th	第１０課　文法のまとめ	練習Ⅰ、Ⅱを学ぶ。
		11th	第１１課　あなたは何をしていますか？	進行と持続のアスペクト、「一会儿」「有点儿」「一点儿」、「打算」＋動詞を学ぶ。
		12th	第１１課　文法のまとめ	練習Ⅰ、Ⅱを学ぶ。
		13th	第１２課　あなたは車の運転ができますか？	助動詞「会」「能」「可以」、二重目的語、禁止の表現「別……/不要……」を学ぶ。
		14th	第１２課　文法のまとめ	練習Ⅰ、Ⅱを学ぶ。
		15th	後期総まとめ	復習と質問応答を実施する。
		16th	期末試験	

Evaluation Method and Weight (%)

	定期試験	小テスト	平常点	Total
Subtotal	60	20	20	100
基礎的能力	60	20	20	100
専門的能力	0	0	0	0
分野横断的能力	0	0	0	0

Akashi College		Year	2021		Course Title	German

Course Information

Course Code	0007		Course Category	General / Elective
Class Format	Lecture		Credits	School Credit: 2
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	4th
Term	Year-round		Classes per Week	2
Textbook and/or Teaching Materials	DVDわかるぞドイツ語！見えるぞドイツ語！　春日正男、松澤淳　(朝日出版社)			
Instructor	YOKOTA Kazuya			

Course Objectives

•The goal is to clearly understand German sentence structure and rules, and to be able to read intermediate German with the help of a dictionary.
•The goal is to be able to express things around them in simple German, using what they learned in interactive practice.
•The goal is to have a deeper understanding of the German way of thinking and lifestyle by reading German reading materials on social conditions.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Clearly understand German sentence structure and rules, and can read intermediate German with the help of a dictionary.	Clearly understand German sentence structure and rules, and can read intermediate German to some extent with the help of a dictionary.	Do not clearly understand German sentence structure and rules, and cannot read intermediate German even with the help of a dictionary.
Achievement 2	Can express things around them in German, using what they learned in interactive practice.	Can express things around them in simple German, using what they learned	Cannot express things around them in simple German.
Achievement 3	Can deepen their understanding of the German way of thinking and lifestyle through reading German reading materials on social conditions.	Can deepen their understanding of the German way of thinking and lifestyle to a certain extent through reading German reading materials on social conditions.	Cannot deepen their understanding of the German way of thinking and lifestyle through reading German reading materials on social conditions.

Assigned Department Objectives

学習・教育到達度目標 (A) 学習・教育到達度目標 (B)

Teaching Method

Outline	The main purpose of this class is to learn the basic grammar of German and to balance students' overall German reading, writing, listening, and speaking abilities. When learning grammar, we will incorporate many interactive practice that use the grammar topics in each section will be incorporated so students can learn German that is practical and alive. In addition, students will improve their German reading comprehension and increase knowledge of Germany through reading materials on German social conditions.
Style	In addition to classes, a lot of interactive practice will be incorporated, and students will also improve reading comprehension through readings. Liaison: Akimoto Hiromi
Notice	(1) During the first class, a few dictionaries will be introduced. Students should choose a dictionary from those that they think will be easy to use and bring it to the class every time. (2) Properly do the assignments given. Students who miss 1/4 or more of classes will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Introduction to German and Germany	Understand the alphabet and pronunciation rules.
		2nd	Introduction to German and Germany	Understand pronunciation rules and greeting expressions.
		3rd	Lektion 1	Grammar: Understand present tense personal conjugation of verbs.
		4th	Lektion 1	Grammar: Understand German word order.
		5th	Lektion 1	Reading: Understand Japan inside Germany.
		6th	Lektion 1	Grammar: Understand sein and haben.
		7th	Lektion 2	Grammar: Understand the gender and number of nouns.
		8th	Lektion 2	Reading: Understand German beer and wine.
	2nd Quarter	9th	Lektion 2	Grammar: Understand case inflections of articles and nouns.
		10th	Lektion 3	Reading: Understand Berlin
		11th	Lektion 3	Grammar: Understand irregular verbs and the imperative mood.
		12th	Lektion 4	Grammar: Understand Europe and the EU.
		13th	Lektion 4	Grammar: Understand definite and indefinite articles.

		14th	Lektion 5	Reading: Understand the part-time jobs of German youth.
		15th	Review	Review the content learned in the first semester.
		16th	Final exam	Understand the content learned.
2nd Semester	3rd Quarter	1st	Lektion 5	Grammar: Understand personal pronouns.
		2nd	Lektion 5	Grammar: Understand prepositions.
		3rd	Lektion 6	Reading: Understand German bakeries.
		4th	Lektion 6	Grammar: Understand modal verbs and the future tense.
		5th	Lektion 6	Grammar: Understand subordinating conjunctions.
		6th	Lektion 7	Reading: Understand the travel situation in Germany.
		7th	Lektion 7	Grammar: Understand separable verbs.
		8th	Lektion 7	Grammar: Understand reflexive verbs.
	4th Quarter	9th	Lektion 8	Reading: Understand Munich.
		10th	Lektion 8	Grammar: Understand case inflections of adjectives.
		11th	Lektion 9	Reading: Understand Oktoberfest in Munich.
		12th	Lektion 9	Grammar: Understand the three basic forms and past tense of verbs.
		13th	Lektion 10	Reading: Understand the football situation in Germany.
		14th	Lektion 10	Grammar: Understand the perfect tense.
		15th	Review	Review the content learned in the second semester.
		16th	Final exam	Understand the content learned.

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Quizes	Total
Subtotal	50	0	0	30	0	20	100
Basic Proficiency	50	0	0	30	0	20	100
Specialized Proficiency	0	0	0	0	0	0	0
Cross Area Proficiency	0	0	0	0	0	0	0

Akashi College	Year	2021		Course Title	French

Course Information

Course Code	0008		Course Category	General / Elective
Class Format	Lecture		Credits	School Credit: 2
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	4th
Term	Year-round		Classes per Week	2
Textbook and/or Teaching Materials	釣馨ほか『私だけのフランス語ノート』／朝日出版社			
Instructor	FUJIMOTO Tomonari,TAKEUCHI Ekuko			

Course Objectives

In the recent trend of globalization, the multilingualism and multiculturalism perspectives have become increasingly important. Internationalization does not make the world uniform, but it requires diverse cultures to co-exist. From the perspective that the best way to learn different cultures is to learn languages, we will become familiar with taking action for a multicultural and multilingual coexistence society through French learning.

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目1	Learn the basic French proficiency by learning the French language structure.	Learn the basic French proficiency by learning the French language structure.	Do not learn the basic French proficiency by learning the French language structure.
評価項目2	Learn the basic French proficiency by learning French vocabulary.	Learn the basic French proficiency by learning French vocabulary.	Do not learn the basic French proficiency by learning French vocabulary.
評価項目3	Can take action for a multicultural and multilingual coexistence society through learning French.	Can take action for a multicultural and multilingual coexistence society through learning French.	Cannot take action for a multicultural and multilingual coexistence society through learning French.

Assigned Department Objectives

学習・教育到達度目標 (A) 学習・教育到達目標 (B)

Teaching Method

Outline	In this course, students will learn the basics of French communication. The French language structure, or so-called grammar, have many rules, and it seems complicated at first glance, such as the relationship between spelling and pronunciation, the rules on the gender of nouns, and the verb conjugation. However, if you become master them to some extent, your horizon will suddenly broaden, and you can communicate fairly well with a few vocabularies. While learning the basic expressions of everyday conversation, such as how to introduce yourself and seasonal greetings, the class aims to help students achieve a balanced mastering of the four skills: listening, speaking, reading, and writing.
Style	After explanation of the grammar and vocabulary, students will do practice questions to acquire proficiency. Liaison: Chiho Kitagawa
Notice	In order to learn foreign languages, it's important to make the most of the innate communication skills and imagination of the learners, so active participation in classes is required. Also, students are encouraged to spend more time for review rather than for pre-study. Students who miss 1/4 or more of classes will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning ☐ Aided by ICT ☑ Applicable to Remote Class ☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance: How classes will be conducted / General explanations about France and the French language	Understand the overview of classes Understand the general characteristics of France and the French language.
		2nd	Lesson 0: L'alphabet and pronunciation / Greeting	Can pronounce French words and greet.
		3rd	Lesson 0: L'alphabet and pronunciation / Greeting	Can use numbers from 1 to 10.
		4th	Lesson 1: Let's introduce yourself!	Can make simple verb conjugation. Can say names of European countries and cities in French.
		5th	Lesson 1: Let's introduce yourself!	Can introduce themselves in French.
		6th	Lesson 2: Let's talk about nationalities and languages!	Understand the basic rules of the gender of nouns.
		7th	Lesson 2: Let's talk about nationalities and languages!	Can listen to names, nationalities, towns, occupations, and words of others.
		8th	Midterm exam	Can introduce themselves in French and understand other people's information without seeing anything. Can write these content in French.
	2nd Quarter	9th	Lesson 3: Let's talk about things around you!	Can increase their vocabulary and talk about things around them.
		10th	Lesson 3: Let's talk about things around you!	Can use numbers up to 20. Can say regions of France and its specialties.
		11th	Lesson 4: Let's talk about your family! (1)	Can use numbers up to 69. Can use the verbs avoir and faire.
		12th	Lesson 4: Let's talk about your family! (1)	Can talk about the ages and occupations of their and other people's family members.

		13th	Lesson 5: Let's talk about your family! (2)	Can talk about the characteristics and personalities of their family members.
		14th	Lesson 5: Let's talk about your family! (2)	Can explain clothes.
		15th	Lesson 6: Let's talk about things you like!	Can talk about things they like.
		16th	Final exam	Can speak and write based on the content learned since week 9.
2nd Semester	3rd Quarter	1st	Review of the topics covered in the first semester, and warm up for the second semester	Can speak and write in French based on the content learned in the first semester.
		2nd	Lesson 7: Let's talk about food!	Can talk about breakfast. Can use the verb prendre. Can explain French cuisine.
		3rd	Lesson 8: Let's go on a trip!	Can talk about destinations. Can talk about transport options. Can use sentences in the near future tense.
		4th	Lesson 9: Let's talk about the weather!	Can speak using weather expressions.
		5th	Lesson 9: Let's say the time and duration!	Can say the time and duration.
		6th	Lesson 10: Let's compare.	Can speak using comparison expressions.
		7th	Lesson 11: Let's shop!	Can use numbers up to 100. Can tell the total amount of shopping.
		8th	Midterm exam	Can speak using the content learned by week 7 of the second semester.
	4th Quarter	9th	Lesson 11: Let's ask the way!	Can use command forms. Can give directions.
		10th	Lesson 12: Let's explain what you do on a day!	Can create sentences using pronominal verbs in the present tense.
		11th	Lesson 12: Let's explain what you do on a day!	Can talk about what they do on a normal day.
		12th	Lesson 13: Let's talk about customs!	Can talk about customs of the French people. Can use the verb pouvoir. Can use personal pronouns.
		13th	Lesson 14: Let's talk about what you did during your trip! (1)	Understand how to form the perfect tense using avoir, and can use it.
		14th	Lesson 15: Let's talk about what you did during your trip! (2)	Understand how to form the perfect tense and imperfect tense using être, and can use them
		15th	Summary of Lessons 14 and 15	Can talk about what they did yesterday based on what they do on a normal day learned in Lesson 12.
		16th	Final exam	

Evaluation Method and Weight (%)

	試験	発表	相互評価	態度	ポートフォリオ	その他	Total
Subtotal	50	0	0	30	0	20	100
基礎的能力	50	0	0	30	0	20	100
専門的能力	0	0	0	0	0	0	0
分野横断的能力	0	0	0	0	0	0	0

Akashi College		Year	2021		Course Title	Mathematical Concepts

Course Information

Course Code	0009		Course Category	General / Elective
Class Format	Lecture		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	4th
Term	Second Semester		Classes per Week	2
Textbook and/or Teaching Materials	碓氷久ほか　大学編入のための数学問題集　大日本図書			
Instructor	MATSUMIYA Atusi			

Course Objectives

（１）確率の諸概念を理解し、確実な計算を身に着け、いろいろな問題をこなせるようになること。
（２）線型代数の諸概念を理解し、行列やベクトルに関する確実な計算を身につけ、いろいろな問題をこなせるようになること。
（３）微積分の諸概念を理解し、確実な計算を身につけ、いろいろな問題をこなせるようになること。
（４）抽象的枠組を具体的問題に適用する能力を獲得し、適切な試験答案の作りかたを身につけること。

以上いずれについても、各回の小試験と期末試験により達成度をはかる。

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目1	確率の諸概念を十分理解し、確実な計算を身につけ、いろいろな問題を十分解くことが出来る。	確率の諸概念を理解し、確実な計算を身につけいろいろな問題を解くことが出来る。	確率の諸概念を理解できず、確実な計算を身につけていないのでいろいろな問題を解くことが出来ない。
評価項目2	線型代数の諸概念を十分理解し、行列やベクトルに関する確実な計算を身につけいろいろな問題を十分解くことが出来る。	線型代数の諸概念を理解し、行列やベクトルに関する確実な計算を身につけいろいろな問題を解くことが出来る。	線型代数の諸概念を理解できず、行列やベクトルに関する確実な計算を身につけいろいろな問題を解くことが出来ない。
評価項目3	微積分の諸概念を十分理解し、確実な計算を身につけいろいろな問題を十分解くことが出来る。	微積分の諸概念を理解し、確実な計算を身につけいろいろな問題を解くことが出来る。	微積分の諸概念を理解できず、確実な計算を身につけていないのでいろいろな問題を解くことが出来ない。
評価項目4	抽象的枠組を具体的問題に適用する能力を十分獲得している。	抽象的枠組を具体的問題に適用する能力を獲得している。	抽象的枠組を具体的問題に適用する能力を獲得出来ていない。

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達度目標 (G) 学習・教育到達度目標 (H)

Teaching Method

Outline	高専で学習した数学に初歩の確率論の学習を含め、これらに関して復習と問題演習を行う。多くの問題を解くことによって数学的能力を高め、さらに高度な数学に親しめる能力を身につけることを目標とする。付随的に、大学編入試験に臨む学生の受験対策の機会にもなるようにしたい。
Style	課題提出をもとに、講義や質問を行い確認小試験を行う。
Notice	テキストは大学編入試験の問題集で、豊富な問題量を含んでいる。自分が必要となる範囲を自分自身で見定めて調べるように心がけ、講義の進行とは別に各自でどんどん学習を進めていくべきである。受け身の受講姿勢では編入試験対策として有効にはならないので注意。 合格の対象としない欠席条件(割合)　1/3以上の欠課

Characteristics of Class / Division in Learning

☑ Active Learning	☑ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	基礎数学の復習１ １年次に学習した数学Aの内容について、復習と問題演習をおこなう。	基礎数学の内容を理解している。
		2nd	基礎数学の復習２ １年次に学習した数学Bの内容について、復習と問題演習をおこなう。	基礎数学の内容を理解している。
		3rd	一変数関数の微分 一変数関数の微分について、復習と問題演習をおこなう。	１変数関数の微分について理解している。
		4th	一変数関数の積分 一変数関数の積分について、復習と問題演習をおこなう。	１変数関数の積分について理解している。
		5th	関数の展開 数列の極限、級数とべき級数、テイラーの定理とテイラー展開について、復習と問題演習をおこなう。	関数の展開について理解している。
		6th	多変数関数の微積分（１） 主として二変数関数の、偏微分、極値の判定について復習し、問題演習をおこなう。	多変数関数の微分について理解している。
		7th	多変数関数の微積分（２） 主として二変数関数の重積分について、計算法と利用法を復習し、問題演習をおこなう。	多変数関数の積分について理解している。
		8th	課題 課題に取り組み補強すべき分野を確認する。	適切な試験答案の作り方を身につける。

		9th	微分方程式 一階、二階の微分方程式の基本的な型についての解法を復習し、問題演習をおこなう。また基本的な型からやや外れるような問題や、連立微分方程式などをとりあげ、問題演習をおこなう。	簡単な１階線形微分方程式を解くことができる。定数係数２階斉次線形微分方程式を解くことができる。
		10th	ベクトル 空間内の図形、線形独立・線形従属などの復習と問題演習をおこなう。	ベクトルに関する問題を解くことが出来る。
		11th	行列と行列式 行列と行列式の計算、階数、連立方程式、逆行列、連立一次方程式の解法などの復習と問題演習をおこなう。	行列に関する問題を解くことが出来る。
	4th Quarter	12th	線形変換 線形変換とその表現行列、行列の固有値と固有ベクトル、行列の対角化について、復習と問題演習をおこなう。	線形変換、固有値と固有ベクトルに関する問題を解くことが出来る。
		13th	ベクトル空間 ベクトル空間、部分空間、基底・次元、線形写像について、やや抽象的な問題の復習と演習をおこなう。	ベクトル空間、部分空間、基底・次元、線形写像に関する問題を解くことが出来る。
		14th	確率　古典的確率概念と具体的問題 素朴な確率概念と、条件つき確率や期待値などの概念を学び、具体的な問題の例をとりあげる。	独立試行の確率、余事象の確率、確率の加法定理、排反事象の確率を理解し、簡単な場合について、確率を求めることが出来る。条件付き確率、確率の乗法定理、独立事象の確率を理解し、簡単な場合について確率を求めることが出来る。
		15th	さまざまな複合的問題 複数の分野にまたがる知識を必要とする問題をいくつかとりあげ、問題演習をおこなう。	適切な試験答案の作りかたを身につけている。
		16th	期末試験	

Evaluation Method and Weight (%)

	試験	発表	相互評価	態度	ポートフォリオ	その他	Total
Subtotal	50	0	0	0	0	50	100
基礎的能力	50	0	0	0	0	50	100
専門的能力	0	0	0	0	0	0	0
分野横断的能力	0	0	0	0	0	0	0

Akashi College			Year	2021		Course Title	Overseas Training Ⅱ

Course Information

Course Code	0010		Course Category	General / Elective
Class Format	Practical training		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	4th
Term	Year-round		Classes per Week	1
Textbook and/or Teaching Materials	なし			
Instructor	All faculty of the department			

Course Objectives

(1)海外における研修への参加を通じて、教養をより高めるための取り組みができる。
(2)異文化の中での研修に参加することで、広い視野を持つことができる。
(3)現地で関わる人々と英語などを用いてコミュニケーションができる。

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目1	海外における研修への参加を通じて、教養をより高めるための取り組みがよくできる。	海外における研修への参加を通じて、教養をより高めるための取り組みができる。	海外における研修への参加を通じて、教養をより高めるための取り組みができない。
評価項目2	異文化の中での研修に参加することで、広い視野を持つことがよくできる。	異文化の中での研修に参加することで、広い視野を持つことができる。	異文化の中での研修に参加することで、広い視野を持つことができない。
評価項目3	現地で関わる人々と英語などを用いてコミュニケーションがよくできる。	現地で関わる人々と英語などを用いてコミュニケーションができる。	現地で関わる人々と英語などを用いてコミュニケーションができない。

Assigned Department Objectives

学習・教育到達度目標 (A) 学習・教育到達度目標 (B) 学習・教育到達度目標 (E)

Teaching Method

Outline	海外における各種の研修体験を通じて、多面的に物事を考える能力やコミュニケーション能力を身に付けることが本科目のねらいである。研修期間は、夏季休業期間などとしてもよい。研修日数は、５日間以上とする。本科目は、海外での研修と、事前指導(マナー教育、研修先の下調べ)、事後の報告会、関係機関に配布する報告書の作成などの自己学習時間の合計が45時間以上に相当する学習内容である。
Style	事前オリエンテーション，現地実習，報告会
Notice	学級担任又は指導教員と緊密に連絡を取り合うこと。研修期間中は、積極的に現地の人たちと関わり、コミュニケーションをとるように努めるとともに、服装・言葉遣い等、研修生として相応しい態度で取り組むこと。 合格の対象としない欠席条件(割合) 条件なし

Characteristics of Class / Division in Learning

☑ Active Learning	☑ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st		
		2nd		
		3rd		
		4th		
		5th		
		6th		
		7th		
		8th		
	2nd Quarter	9th		
		10th		
		11th		
		12th		
		13th		
		14th		
		15th		
		16th	期末試験実施せず	
2nd Semester	3rd Quarter	1st		
		2nd		
		3rd		
		4th		
		5th		
		6th		
		7th		
		8th		

		9th		
	4th Quarter	10th		
		11th		
		12th		
		13th		
		14th		
		15th		
		16th	期末試験実施せず	

Evaluation Method and Weight (%)

	報告書	発表	Total
Subtotal	50	50	100
分野横断的能力	50	50	100

Akashi College		Year	2021		Course Title	Japanese IV

Course Information

Course Code	0029		Course Category	General / Compulsory
Class Format	Lecture		Credits	School Credit: 2
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	4th
Term	Year-round		Classes per Week	2
Textbook and/or Teaching Materials				
Instructor	KANEKO Akemi			

Course Objectives

   To improve the ability to use Japanese correctly, and to enable students to understand Japanese correctly in various situations in the classroom and in the daily life, and to freely express Japanese appropriate for a situation.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Understand Japanese correctly in various situations in classes and daily life.	Understand Japanese in various situations in classes and daily life.	Do not understand Japanese in various situations in class and daily life.
Achievement 2	Can express it freely using Japanese that is appropriate for the situation.	Can expressed it using Japanese appropriate for the situation.	Cannot express it using Japanese as appropriate for the situation.

Assigned Department Objectives

Teaching Method

Outline	Kanji, phrase, grammar, long article reading aloud, listening practice, reading, paper, senryu verse, honorific, and interview practice
Style	Classes are for international students and will be carried out as lectures, including practices on the following class content.
Notice	• Concentrate on the class • Do homework • Do not forget belongings Students who miss 1/3 or more of classes will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Explanation of how the class is conducted and how it should be taken, and honorific words	Can correctly handle the Japanese language in relation to the left.
		2nd	Kanji, phrases, reading aloud, reading, long article reading, listening, and honorific	Can correctly handle the Japanese language in relation to the left.
		3rd	Kanji, phrases, reading aloud, long article reading, listening and grammar	Can correctly handle the Japanese language in relation to the left.
		4th	Kanji, phrases, reading aloud, long article reading, listening and grammar	Can correctly handle the Japanese language in relation to the left.
		5th	Kanji, phrases, reading aloud, long article reading, listening and grammar	Can correctly handle the Japanese language in relation to the left.
		6th	Kanji, phrases, reading aloud, long article reading, listening and grammar	Can correctly handle the Japanese language in relation to the left.
		7th	Kanji, phrases, reading aloud, long article reading, listening and grammar	Can correctly handle the Japanese language in relation to the left.
		8th	Kanji, phrases, reading aloud, long article reading, listening and grammar	Can correctly handle the Japanese language in relation to the left.
	2nd Quarter	9th	Kanji, phrases, reading aloud, long article reading, listening and grammar	Can correctly handle the Japanese language in relation to the left.
		10th	Kanji, phrases, reading aloud, long article reading, listening and grammar	Can correctly handle the Japanese language in relation to the left.
		11th	Kanji, phrases, reading aloud, long article reading, listening and folklore	Can correctly handle the Japanese language in relation to the left.
		12th	Kanji, phrases, reading aloud, long article reading, listening and folklore	Can correctly handle the Japanese language in relation to the left.
		13th	Kanji, phrases, reading aloud, long article reading, listening, and senryu verse	Can correctly handle the Japanese language in relation to the left.
		14th	Kanji, phrases, reading aloud, long article reading, listening, and senryu verse	Can correctly handle the Japanese language in relation to the left.
		15th	Final exam	Can correctly use the Japanese language in relation to the left to show learning results.
		16th	None	
2nd Semester	3rd Quarter	1st	Kanji, phrases, reading aloud, long article reading, listening, writing of papers, and idioms	Can correctly handle the Japanese language in relation to the left.
		2nd	Kanji, phrases, reading aloud, long article reading, listening, writing of papers, and idioms	Can correctly handle the Japanese language in relation to the left.

		3rd	Kanji, phrases, reading aloud, long article reading, listening, writing a paper, and four-letter idioms	Can correctly handle the Japanese language in relation to the left.
		4th	Kanji, phrases, reading aloud, long article reading, listening, writing a paper, and four-letter idioms	Can correctly handle the Japanese language in relation to the left.
		5th	Kanji, phrases, reading aloud, long article reading, listening, writing of papers, historical idioms	Can correctly handle the Japanese language in relation to the left.
		6th	Kanji, phrases, reading aloud, long article reading, listening, writing of papers, historical idioms	Can correctly handle the Japanese language in relation to the left.
		7th	Kanji, phrases, reading aloud, long article reading, listening and writing papers	Can correctly handle the Japanese language in relation to the left.
		8th	Kanji, phrases, reading aloud, long article reading, listening and writing papers	Can correctly handle the Japanese language in relation to the left.
	4th Quarter	9th	Kanji, phrases, reading aloud, long article reading, listening and writing papers	Can correctly handle the Japanese language in relation to the left.
		10th	Kanji, phrases, reading aloud, long article reading, listening, and preparation for the incorporation test, and preparing for transfer admission test	Can correctly handle the Japanese language in relation to the left.
		11th	Kanji, phrases, reading aloud, long article reading, and discussion	Can correctly handle the Japanese language in relation to the left.
		12th	Kanji, phrases, reading aloud, long article reading, and discussion	Can correctly handle the Japanese language in relation to the left.
		13th	Kanji, phrases, long article reading, listening and interview exercises	Can correctly handle the Japanese language in relation to the left.
		14th	Kanji, phrases, long article reading, listening and interview exercises	Can correctly handle the Japanese language in relation to the left.
		15th	Final exam	Can correctly use the Japanese language in relation to the left to achieve learning results.
		16th	None	

Evaluation Method and Weight (%)

	Examination	Task · Organize notes · Little test	Total
Subtotal	70	30	100
Basic Proficiency	70	30	100
Specialized Proficiency	0	0	0
Cross Area Proficiency	0	0	0

Akashi College		Year	2021		Course Title	Ｃｏ＋ｗｏｒｋⅢA

Course Information

Course Code	0011		Course Category	Specialized / Compulsory
Class Format	Seminar		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	4th
Term	First Semester		Classes per Week	2
Textbook and/or Teaching Materials	No required textbook and the required material will change according to the contents of the activity of each team.			
Instructor	All faculty			

Course Objectives

1) Self-reliance: To acquire individuality and self-management ability
2) Co-operation skills: To gain the ability to work in teams and respect the teammates.
3) Creative Skills: To acquire the ability to gather and organize information, discover and propose solutions to problems.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
1 Self-reliance	Schedule management, reporting, contact, consultation, planning goals with the teammates	Individually able to schedule management, reporting, contact, consultation, planning goals.	Not able to schedule management, reporting, contact, consultation, and planning goals
2 Co-operation skills	Open to different opinions, able to express the student personal opinion, and ability to lead the team into a consensus.	Open to different opinions, able to express the student personal opinion, and ability to play the attributed role in the team.	Not open to different opinions, not able to express the student personal opinion, and can't to play the attributed role in the team.
3 Creative Skills	The student can voluntarily gather information, organize and summarize this information, form ideas and explain those ideas to others.	The student can voluntarily gather information, organize and summarize this information, and explain those ideas to others.	The student can't voluntarily gather information, can't organize and summarize this information, and can't explain those ideas to others.

Assigned Department Objectives

学習・教育到達度目標 (B) 学習・教育到達度目標 (H)

Teaching Method

Outline	This course aims to develop the students' self-reliance, co-operation and creative skills in a manner that the student can contribute to a team in a variety of environments (working with students from other departments, different age, and people from outside the school). Each group is to work with the instructor in charge and challenge themselves in creating something or perform activities that will bring happiness to someone other than the team members. Each team has to elaborate a plan and do its activities. The students will revise their plan after its presentation at a briefing session and retrospective evaluation.
Style	2nd,3rd, and 4th academic year students from all four departments are randomly selected to compose a group with 8 to 9 students. After each student introduces themselves to the team, they will perform ice breaks and other activities that will help to build relationships within the group. Later the team will discuss and discover a problem to work with, make plans, divide roles among the members and work together toward a solution to the problem. Through working to solve this problem the students will achieve the goals of self-reliance, co-operation, and creativity. After the course start, make sure that you can contact the teacher in charge of the team. Based on the course rubric distributed in class each student has to establish individual goals. The course rubric is used to self-evaluation, mutual evaluation, and to evaluate the performance of each student. Every week at the end of the lesson, the student has to fill a retrospective sheet and set the next goal.
Notice	The grading system of the course is composed on the self-evaluation by students, mutual evaluation, evaluation by the teacher in charge of the team (1), and multiple faculty members at the briefing session at the end of the term (2).

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Course overall guidance, presentation of the members of each team, team building guidance, confirmation of course schedule, restrictions and advice regarding the activities, explanation of the evaluation method. Later team members and the team and the teacher in charge meet and work together on team building.	To acquire Self-reliance, Co-operation and Creative Skills.
		2nd	Each student set the activity targets, and self-goals. The team will discuss ideas and a theme to the activities. Later according to the team activity goal, the group will work on the implementation method, division of roles among the members and schedule, which will be summarized in an action plan.	To acquire Self-reliance, Co-operation and Creative Skills.

		3rd	Each student set the activity targets, and self-goals. The team will discuss ideas and a theme to the activities. Later according to the team activity goal, the group will work on the implementation method, division of roles among the members and schedule, which will be summarized in an action plan.	To acquire Self-reliance, Co-operation and Creative Skills.
		4th	Each student set the activity targets, and self-goals. The team will discuss ideas and a theme to the activities. Later according to the team activity goal, the group will work on the implementation method, division of roles among the members and schedule, which will be summarized in an action plan.	To acquire Self-reliance, Co-operation and Creative Skills.
		5th	Setting targets and planning activities, submit the action plan. According to the theme and goals of the team, the group will draw ideas and discuss them. The group will establish the activity goal, decide the method to achieve it, decide members' role sharing, schedule, and summarize in a plan.	To acquire Self-reliance, Co-operation and Creative Skills.
		6th	Team activities: Work according to the action plan. The action plan may be modified/changed, according to schedule delay, the incompleteness of the implementation method, etc.	To acquire Self-reliance, Co-operation and Creative Skills.
		7th	Team activities: Work according to the action plan.	To acquire Self-reliance, Co-operation and Creative Skills.
		8th	No mid-term Exam	
	2nd Quarter	9th	Team activities: Work according to the action plan. The action plan may be modified/changed, according to schedule delay, the incompleteness of the implementation method, etc. Prepare to the briefing session.	To acquire Self-reliance, Co-operation and Creative Skills.
		10th	Team activities: Work according to the action plan. The action plan may be modified/changed, according to schedule delay, the incompleteness of the implementation method, etc. Prepare to the briefing session.	To acquire Self-reliance, Co-operation and Creative Skills.
		11th	Team activities: Work according to the action plan. The action plan may be modified/changed, according to schedule delay, the incompleteness of the implementation method, etc. Prepare to the briefing session.	To acquire Self-reliance, Co-operation and Creative Skills.
		12th	Team activities: Work according to the action plan. The action plan may be modified/changed, according to schedule delay, the incompleteness of the implementation method, etc. Prepare to the briefing session.	To acquire Self-reliance, Co-operation and Creative Skills.
		13th	Briefing session: Report the activities of the team and listen to reports from other groups.	To acquire Self-reliance, Co-operation and Creative Skills.
		14th	Retrospective meeting and summary of activities: The group will discuss the results from the briefing session and review the team action plan. The students will evaluate individually and mutually their achieved points and goals, regarding self-reliance, co-operation, and creativity.	To acquire Self-reliance, Co-operation and Creative Skills.
		15th	Retrospective meeting and summary of activities: The group will discuss the results from the briefing session and review the team action plan. The students will evaluate individually and mutually their achieved points and goals, regarding self-reliance, co-operation, and creativity.	To acquire Self-reliance, Co-operation and Creative Skills.
		16th	No end-term Exam	

Evaluation Method and Weight (%)

	Individual Self-reliance (process)	Individual Co-operation (process)	Individual Creativity (process)	Team Co-operation (process)	Team Creativity (process)	Other	Total
Subtotal	32	32	16	10	10	0	100
Basic Proficiency	0	0	0	0	0	0	0
Specialized Proficiency	0	0	0	0	0	0	0
Cross Area Proficiency	32	32	16	10	10	0	100

Akashi College		Year	2021		Course Title	Ｃｏ＋ｗｏｒｋⅢB

Course Information

Course Code	0012			Course Category	Specialized / Compulsory
Class Format	Seminar			Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course			Student Grade	4th
Term	Second Semester			Classes per Week	2
Textbook and/or Teaching Materials	『Co+workガイドブック～学習のてびき』、その他、各チームの活動の内容に応じて適宜担当教員が用意する。				
Instructor	All faculty				

Course Objectives

自律に関する到達目標：自己調整ができる。
協働に関する到達目標：他者を尊重しながらチームで作業ができる。
創造に関する到達目標：発見を促進し、新しい提案ができる。

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
自律に関する到達目標	タイムマネジメントや必要に応じた報告・連絡・相談ができ、目標を立て振り返ることができる。これらを自分なりの判断と工夫を加え最善と思う行動をとる。	タイムマネジメントや必要に応じた報告・連絡・相談ができ、目標を立て振り返ることができる。これらのことをやるべき時に行う。	タイムマネジメントや必要に応じた報告・連絡・相談、目標を立て振り返ることの行動が伴わない。
協働に関する到達目標	他者の意見をしっかりと聞き、他者を受け入れつつ自己表現ができる。また、協働作業に貢献することができる。これらを自分なりの判断と工夫を加え最善と思う行動をとる。	他者の意見をしっかりと聞き、他者を受け入れつつ自己表現ができる。また、協働作業に貢献することができる。これらのことをやるべき時に行う。	他者の意見をしっかりと聞くこと、他者を受け入れつつ自己表現を行う行動が伴わない。また、協働作業に貢献する行動が伴わない。
創造に関する到達目標	情報の収集・意味づけができ、モノ・サービスの制約条件（提案が影響を及ぼす範囲や条件）を特定できる。また、新しいモノ・サービスを提案できる。これらを自分なりの判断と工夫を加え最善と思う行動をとる。	情報の収集・意味づけができ、モノ・サービスの制約条件（提案が影響を及ぼす範囲や条件）を特定できる。また、新しいモノ・サービスを提案できる。これらのことをやるべき時に行う。	情報の収集・意味づけを行うことや、モノ・サービスの制約条件（提案が影響を及ぼす範囲や条件）を特定する行動が伴わない。また、新しいモノ・サービスを提案する行動が伴わない。

Assigned Department Objectives

学習・教育到達度目標 (B) 学習・教育到達度目標 (H)

Teaching Method

Outline	本授業は、2、3、4年生、4学科の学生を無作為に選んで構成された数名で編成されたチームで行うPBL型授業である。1人の教員が1チームもしくは2チームを担当する。多様な環境（他学科・他学年の学生との交わり、学外の人々との交わりなど）の中で、自律、協働、創造の能力を養成することを目的とする。受講生は、自らチーム内での役割を考えて行動しチームワーク力を発揮して、メンバーと協働しながら創造的な活動を行うことが求められる。活動テーマは、SDGs（持続可能な開発目標）の17の目標につながる、誰かを幸せにするものとし、チームにとってのチャレンジを含むものとする。
Style	ルーブリックを参照しながら、各自で自己目標を立てる。そしてチーム内で自己紹介、アイスブレイクを通じてチーム内の人間関係を構築する。次にチームで、SDGs（持続可能な開発目標）の17の目標の目標の細分化項目の調査や把握を通じて、その理解を深める。それから話し合いを通じて、SDGsの目標につながるチームの活動テーマを確定し、活動計画書を作成する。その後はチームで協力、役割分担をしながら計画的に、提案やプロトタイプの作成、実践活動などを進める。毎週、授業の終わりにチームでふりかえりを行い、報告書を作成し担当教員に提出する。必要に応じて修正を加えながら次回の目標を立てる。第13週に後期末報告会を行い、チームの活動の報告を行い、他のチームの担当教員や学生からの講評を受ける。後期終了時には、担当教員と自己評価や相互評価を用いたふりかえりを行う。
Notice	（1）個人の取り組み 60%（自律（40%）＋協働（40%）＋創造（20%）） （2）チームの取り組み20%（協働（50%）＋創造（50%）） （3）成果 20%（協働（50%）＋創造（50%）） 上記（1）は、ルーブリックを用いた学生の自己評価、相互評価と教員の評価をもとに、チームの担当教員が評価を行う。（2）（3）は後期末報告会での複数の教員による評価とする。60点以上を合格とする。 合格の対象としない欠席条件(割合) 1/4以上の欠課

Characteristics of Class / Division in Learning

☑ Active Learning	☑ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	活動目標の決定および活動内容の計画 自律、協働、創造に関する自己目標を各自で定めて記録する。活動計画書に従ってチームで活動を行う。スケジュールの遅延や実施方法の不備等が明らかになった場合、活動計画の修正・変更を行う。	活動を見直し修正をかけることができる
		2nd	チーム活動 活動計画書に従ってチームで活動を行う。スケジュールの遅延や実施方法の不備等が明らかになった場合、活動計画の修正・変更を行う。	自律、協働、創造の能力を身に付ける
		3rd	チーム活動 活動計画書に従ってチームで活動を行う。スケジュールの遅延や実施方法の不備等が明らかになった場合、活動計画の修正・変更を行う。	自律、協働、創造の能力を身に付ける

		4th	チーム活動 活動計画書に従ってチームで活動を行う。スケジュールの遅延や実施方法の不備等が明らかになった場合、活動計画の修正・変更を行う。	自律、協働、創造の能力を身に付ける
		5th	チーム活動 活動計画書に従ってチームで活動を行う。スケジュールの遅延や実施方法の不備等が明らかになった場合、活動計画の修正・変更を行う。	自律、協働、創造の能力を身に付ける
		6th	チーム活動 活動計画書に従ってチームで活動を行う。スケジュールの遅延や実施方法の不備等が明らかになった場合、活動計画の修正・変更を行う。	自律、協働、創造の能力を身に付ける
		7th	チーム活動 活動計画書に従ってチームで活動を行う。スケジュールの遅延や実施方法の不備等が明らかになった場合、活動計画の修正・変更を行う。	自律、協働、創造の能力を身に付ける
		8th	チーム活動 活動計画書に従ってチームで活動を行う。スケジュールの遅延や実施方法の不備等が明らかになった場合、活動計画の修正・変更を行う。	自律、協働、創造の能力を身に付ける
	4th Quarter	9th	チーム活動 活動計画書に従ってチームで活動を行う。スケジュールの遅延や実施方法の不備等が明らかになった場合、活動計画の修正・変更を行う。最終報告会の準備を行う。	自律、協働、創造の能力を身に付ける
		10th	チーム活動 活動計画書に従ってチームで活動を行う。スケジュールの遅延や実施方法の不備等が明らかになった場合、活動計画の修正・変更を行う。最終報告会の準備を行う。	自律、協働、創造の能力を身に付ける
		11th	チーム活動 活動計画書に従ってチームで活動を行う。スケジュールの遅延や実施方法の不備等が明らかになった場合、活動計画の修正・変更を行う。最終報告会の準備を行う。	自律、協働、創造の能力を身に付ける
		12th	チーム活動 活動計画書に従ってチームで活動を行う。スケジュールの遅延や実施方法の不備等が明らかになった場合、活動計画の修正・変更を行う。最終報告会の準備を行う。	自律、協働、創造の能力を身に付ける
		13th	後期末報告会 活動内容を共有するためにチームの活動について報告を行う。他のチームの報告を聞く。	他のチームの活動を共有し、評価する チームの活動を簡潔に伝えることができる
		14th	振り返り会・これまでの活動のまとめ 後期末報告会の振り返りを行うと共にこれまでのチーム活動を省み、チームの評価を行う。各自の行動を省みて、自律、協働、創造に関して目標達成した点や反省点を自己および相互に記録する。	チームや自身の行動を客観的にふりかえることができる
		15th	振り返り会・これまでの活動のまとめ 後期末報告会の振り返りを行うと共にこれまでのチーム活動を省みる。自己および相互の行動の記録をもとにチーム担当教員より個別にフィードバックを受ける。	チームや自身の行動を客観的にふりかえることができる
		16th	期末試験　実施せず	

Evaluation Method and Weight (%)

	個人評価（プロセス評価）（自律）	個人評価（プロセス評価）（協働）	個人評価（プロセス評価）（創造）	チーム評価（成果物、報告会）（協働）	チーム評価（成果物、報告会）（創造）	Total
Subtotal	24	24	12	20	20	100
基礎的能力	0	0	0	0	0	0
専門的能力	0	0	0	0	0	0
分野横断的能力	24	24	12	20	20	100

Akashi College	Year	2021		Course Title	Applied Physics I

Course Information

Course Code	0013		Course Category	Specialized / Compulsory
Class Format	Lecture		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	4th
Term	First Semester		Classes per Week	2
Textbook and/or Teaching Materials				
Instructor	OGASAWARA Hiromichi			

Course Objectives

(1) Understand the description of motion of an object and the fundamental laws of mechanics.
(2) Understand the basics of how to handle point masses in general based on the fundamental laws of mechanics.
(3) Understand the basics of how to handle rigid body based on the fundamental laws of mechanics.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Can explain the description of the motion of an object and the fundamental laws of mechanics correctly, and apply them to specific questions accurately.	Can explain the description of the motion of an object and the fundamental laws of mechanics, and apply them to specific questions.	Cannot explain the description of the motion of an object and the fundamental laws of mechanics, or apply them to specific questions.
Achievement 2	Can explain the basics of how to handle point masses based on the fundamental laws of mechanics correctly, and apply them to specific questions accurately.	Can explain the basics of how to handle point masses based on the fundamental laws of mechanics, and apply them to specific questions.	Cannot explain the basics of how to handle point masses based on the fundamental laws of mechanics, or apply them to specific questions.
Achievement 3	Can explain the basics of how to handle rigid body based on the fundamental laws of mechanics correctly, and apply them to specific questions accurately.	Can explain the basics of how to handle rigid body based on the fundamental laws of mechanics, and apply them to specific questions.	Cannot explain the basics of how to handle rigid body based on the fundamental laws of mechanics correctly, or apply them to specific questions accurately.

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達度目標 (G)

Teaching Method

Outline	Following Science IIIA (second semester), this course will lecture on mechanics.
Style	Classes will be taught in a lecture style, and there will also be exercises and quizzes.
Notice	Instead of learning each knowledge (e.g., question) by memorizing it individually, students should understand the laws that govern them (including being able to apply them to specific situations). Also, students should be aware of the relationships between the various laws, and try to understand concepts in physics systematically. Students can earn extra points by submitting voluntary assignments, and lose their points depending on their attitude, etc. in the class. Students who miss 1/3 or more of classes will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Motion and force, and mechanical energy	Learn how to handle motion and force in planes and spaces based on the laws of motion. It is including topics about mechanical energy.
		2nd	Motion and force, and mechanical energy	Learn how to handle motion and force in planes and spaces based on the laws of motion. It is including topics about mechanical energy.
		3rd	Motion and force, and mechanical energy	Learn how to handle motion and force in planes and spaces based on the laws of motion. It is including topics about mechanical energy.
		4th	Motion and force, and mechanical energy	Learn how to handle motion and force in planes and spaces based on the laws of motion. It is including topics about mechanical energy.
		5th	Motion and force, and mechanical energy	Learn how to handle motion and force in planes and spaces based on the laws of motion. It is including topics about mechanical energy.
		6th	Law on momentum and angular momentum	Learn how to handle motion of center-of-mass and rotational motion, especially the laws of momentum and angular momentum.
		7th	Law on momentum and angular momentum	Learn how to handle motion of center-of-mass and rotational motion, especially the laws of momentum and angular momentum.
		8th	Midterm exam	

		9th	Law on momentum and angular momentum	Learn how to handle motion of center-of-mass and rotational motion, especially the laws of momentum and angular momentum.
	2nd Quarter	10th	Law on momentum and angular momentum	Learn how to handle motion of center-of-mass and rotational motion, especially the laws of momentum and angular momentum.
		11th	Rigid body dynamics	Learn how to handle rigid bodies based on fundamental of mechanics.
		12th	Rigid body dynamics	Learn how to handle rigid bodies based on fundamental of mechanics.
		13th	Rigid body dynamics	Learn how to handle rigid bodies based on fundamental of mechanics.
		14th	Rigid body dynamics	Learn how to handle rigid bodies based on fundamental of mechanics.
		15th	Rigid body dynamics	Learn how to handle rigid bodies based on fundamental of mechanics.
		16th	Final exam	

Evaluation Method and Weight (%)

	Examination	Exercise / Short test	Total
Subtotal	60	40	100
Basic Proficiency	0	0	0
Specialized Proficiency	60	40	100
Cross Area Proficiency	0	0	0

Akashi College		Year	2021		Course Title	Applied Physics II

Course Information

Course Code	0014		Course Category	Specialized / Compulsory
Class Format	Lecture		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	4th
Term	Second Semester		Classes per Week	2
Textbook and/or Teaching Materials				
Instructor	OGASAWARA Hiromichi			

Course Objectives

(1) Understand the basics of how to handle vibration phenomena in mechanics.
(2) Understand the basics of optics.
(3) Understand the basics of thermodynamics.
(4) Conduct experiments and compile their content in a report.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Can explain the basic concepts of vibration phenomena correctly and apply them to specific questions accurately.	Can explain the basic concepts of vibration phenomena and apply them to specific questions.	Cannot explain the basic concepts of vibration phenomena or apply them to specific questions.
Achievement 2	Can explain the basic concepts of optics correctly and apply them to specific questions accurately.	Can explain the basic concepts of optics and apply them to specific questions.	Cannot explain the basic concepts of optics or apply them to specific questions.
Achievement 3	Can explain the basic concepts of thermodynamics correctly and apply them to specific questions accurately.	Can explain the basic concepts of thermodynamics and apply them to specific questions.	Cannot explain the basic concepts of thermodynamics or apply them to specific questions.
Achievement 4	Can give accurate insight into the experiments conducted by themselves and summarize the results appropriately in a report.	Can give insight into the experiments conducted by themselves and summarize the results in a report.	Cannot give insight into the experiments conducted by themselves or summarize the results in a report.

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達度目標 (G)

Teaching Method

Outline	Among the major fields in classical physics, this course will lecture on vibration in mechanics, optics, and thermodynamics. It will also involve mechanical measurement experiments.
Style	Regular classes will be taught in a lecture style, and there will also be exercises and quizzes. In addition, there will be two classes to conduct experiments.
Notice	Instead of learning each knowledges (e.g., questions) by memorizing individually, students should understand the laws that the knowledges are derived from (including the ability to apply them to specific situations), Also, students should be aware of the relationships between the various laws, and try to understand concepts in physics systematically. Students can earn extra points by submitting voluntary assignments, and lose their points depending on their attitude, etc. in the class. The schedule of the experiment may be changed depending on the usage of the laboratory, etc. Students who miss 1/3 or more of classes will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Several topics about vibration	Learn some topics about vibration based on the mechanics and mathematics learned so far.
		2nd	Several topics about vibration	Learn some topics about vibration based on the mechanics and mathematics learned so far.
		3rd	Several topics about vibration	Learn some topics about vibration based on the mechanics and mathematics learned so far.
		4th	Basics in optics	Learn the basics of optics.
		5th	Basics in optics	Learn the basics of optics.
		6th	Basics in optics	Learn the basics of optics.
		7th	Basics in optics	Learn the basics of optics.
		8th	Midterm exam	
	4th Quarter	9th	Mechanical experiments	Learn how to conduct and report experiments on the theme of mechanical measurement.
		10th	Mechanical experiments	Learn how to conduct and report experiments on the theme of mechanical measurement.
		11th	Basics in thermodynamics	Learn the basics of thermodynamics.
		12th	Basics in thermodynamics	Learn the basics of thermodynamics.
		13th	Basics in thermodynamics	Learn the basics of thermodynamics.

		14th	Basics in thermodynamics	Learn the basics of thermodynamics.
		15th	Basics in thermodynamics	Learn the basics of thermodynamics.
		16th	Final exam	

Evaluation Method and Weight (%)

	Examination	Exercise / Short test	Report	Total
Subtotal	48	32	20	100
Basic Proficiency	0	0	0	0
Specialized Proficiency	48	32	20	100
Cross Area Proficiency	0	0	0	0

Akashi College		Year	2021		Course Title	Transient Analysis on Electric Circuits

Course Information

Course Code	0015		Course Category	Specialized / Compulsory
Class Format	Lecture		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	4th
Term	First Semester		Classes per Week	2
Textbook and/or Teaching Materials	本郷忠敬著：「基礎 過渡現象」、オーム社			
Instructor	SUYAMA Taikei			

Course Objectives

過渡現象に関する基礎的な問題と解法を理解すること。数学的解釈のみにとどまらず、物理的意味も理解すること。扱う回路は次の3種類である。
(1)単エネルギー回路(R-L回路, R-C回路)
　単エネルギー回路の理解と解法。
(2)複エネルギー回路(R-L-C回路)
　複数種のエネルギー問題。発振回路の基本的な設計知識。
(3)分布定数回路
　基本的性質の理解と通信回線・送電線など現実の線路との関連。

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目1	単エネルギー回路(R-L回路, R-C回路)：単エネルギー回路の問題と解法を理解し、実際問題が解ける。	単エネルギー回路(R-L回路, R-C回路)：単エネルギー回路の問題と解法を理解できる。	単エネルギー回路(R-L回路, R-C回路)：単エネルギー回路の問題と解法を理解できない。
評価項目2	複エネルギー回路(R-L-C回路)：複数種のエネルギー問題、発振回路の基本的な設計ができる。	複エネルギー回路(R-L-C回路)：複数種のエネルギー問題、発振回路の基本的な設計が理解できる。	複エネルギー回路(R-L-C回路)：複数種のエネルギー問題、発振回路の基本的な設計ができない。
評価項目3	分布定数回路：基本的性質と通信回線・送電線など現実の線路との関連を理解し、問題を解決できる。	分布定数回路：基本的性質と通信回線・送電線など現実の線路との関連が理解できる。	分布定数回路：基本的性質と通信回線・送電線など現実の線路との関連が理解できない。

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達度目標 (F) 学習・教育到達度目標 (H)

Teaching Method

Outline	定常現象と過渡現象の相違を明らかにし、単・複エネルギー回路と分布定数回路の過渡現象について学ぶ。そのような過渡現象にラプラス変換を使用して微分方程式を解く方法を述べる。
Style	合格の対象としない欠席条件（割合）： 1/3以上の欠課 定期試験100%。 上記成績が総合60点以上であれば合格とする。 合格の基準は次の3点である。 (1)過渡現象に関する基礎的な問題と解法を理解すること。 (2)単・複エネルギー回路、分布定数回路の過渡現象を理解し、解析できること。 (3)数学的解釈のみにとどまらず、物理的意味を理解すること。
Notice	ラプラス変換を使用して微分方程式を解くことが主となるので、種々の数学関数のラプラス変換・逆変換をしっかり勉強しておく必要がある。 合格の対象としない欠席条件(割合) 1/3以上の欠課

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	過渡現象と問題解法の準備 過渡現象の基本的な概念について説明し、その取り扱いについて、学習の指針を述べる。単エネルギーR-L回路の過渡現象問題の解法を説明する。	単エネルギーR-L回路の過渡現象問題の解法を説明できる。
		2nd	単エネルギー回路の過渡現象(1) 一般的にR-LまたはR-C回路の過渡現象では、静電エネルギーまたは磁界エネルギーの一方しか存在しないので、振動が起こらない。直流起電力を加えるそのような回路について学習する。	R-LまたはR-C回路の過渡現象では、静電エネルギーまたは磁界エネルギーの一方しか存在しないので、振動が起こらないことを理解できる。
		3rd	単エネルギー回路の過渡現象(2) LR回路に交流起電力を加える場合の解法を説明し、交流起電力を加える場合、単エネルギー回路の過渡現象を学習する。	LR回路に交流起電力を加える場合、単エネルギー回路の過渡現象を理解できる。
		4th	複エネルギー回路の過渡現象(1) 1つの回路に磁界エネルギーと静電エネルギーが存在する、即ちL,C,Rが混在する回路では、微分方程式は2階となり、振動する場合とそうでない場合が出て来る。そのような回路について学習する。	複エネルギー回路の過渡現象の基礎、微分方程式の解法を理解できる。

		5th	ラプラス変換の定義、ラプラス変換の諸定理と逆変換 ラプラス変換を定義し、これを用いた問題解法の指針を与える。実際に問題を解く場合に必要なラプラス変換の諸定理と逆変換について、解説と演習を行う。LまたはCを含む基本的回路について、ラプラス変換を用いて、電圧・電流の一般解を求める方法について解説する。	ラプラス変換の諸定理と逆変換を理解し、LまたはCを含む基本的回路について、ラプラス変換を用いて、電圧・電流の一般解を求める方法を理解できる。
		6th	ラプラス変換を用いたLRC回路解析の基礎 LとCの両方を含む複エネルギー回路について、ラプラス変換を用いて、電圧・電流の一般解を求める方法について解説する。	ラプラス変換を用いて、複エネルギー回路の電圧・電流の一般解を求めることができる。
		7th	演習 単エネルギー回路と複エネルギー回路の過渡現象についての演習を行う。	演習 単エネルギー回路と複エネルギー回路の過渡現象についての演習を行う。
		8th	中間試験	中間試験
	2nd Quarter	9th	複エネルギー回路の過渡現象(2) 直流起電力を加える場合、複エネルギー回路のLRC回路の放電の過渡現象について学習する。	直流起電力を加える場合、複エネルギー回路のLRC回路の放電の過渡現象を理解できる。
		10th	複エネルギー回路の過渡現象(3) 交流起電力を加える場合、複エネルギー回路のLRC回路に交流起電力を加える場合の過渡現象について学習する。	交流起電力を加える場合、複エネルギー回路のLRC回路に交流起電力を加える場合の過渡現象を理解できる。
		11th	相互誘導回路 LRM回路について学習する。	相互誘導回路のLRM回路の特性を理解できる。
		12th	分布定数回路の定常現象と過渡現象の基礎 分布定数回路の定常現象と過渡現象時における基礎方程式を導出し、基本的な概念と考え方について説明する。	分布定数回路の定常現象と過渡現象時における基礎方程式を導出し、基本的な概念と考え方を理解できる。
		13th	分布定数回路の過渡現象(1) 無限長線路・無損失線路・無ひずみ線路について、ラプラス変換を用いた解法を紹介する。	無限長線路・無損失線路・無ひずみ線路について、ラプラス変換を用いた解法を理解できる。
		14th	分布定数回路の過渡現象(2) 前週に続き、分布定数回路の過渡現象について、ラプラス変換を用いた解法を学習する。線路上の波動伝搬速度を求める。	分布定数回路の過渡現象について、ラプラス変換を用いた解法を学習する。線路上の波動伝搬速度を求めることができる。
		15th	演習 複エネルギー回路と分布定数回路についての演習を行う。	演習 複エネルギー回路と分布定数回路についての演習を行う。
		16th	期末試験	期末試験

Evaluation Method and Weight (%)

	試験	演習	相互評価	態度	ポートフォリオ	その他	Total
Subtotal	100	0	0	0	0	0	100
基礎的能力	0	0	0	0	0	0	0
専門的能力	100	0	0	0	0	0	100
分野横断的能力	0	0	0	0	0	0	0

Akashi College		Year	2021		Course Title	Electronic Circuits I

Course Information

Course Code	0016	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course	Student Grade	4th
Term	First Semester	Classes per Week	2
Textbook and/or Teaching Materials	伊東規之：「テキストブック電子回路」，日本理工出版会		
Instructor	OHMUKAI Masato		

Course Objectives

以下の能力を修得することを目標とする．
1) 能動素子の特徴を理解し，それらを用いた基本的な回路について，原理および特性を正確に理解し，解析できる．
2) 増幅回路の基礎動作と特性について正確に理解し、等価回路を用いて解析できる．

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目1	能動素子の特徴を理解し，それらを用いた基本的な回路について，原理および特性を正確に理解し，解析できる．	能動素子の特徴を理解し，それらを用いた基本的な回路について，原理および特性を理解し，解析できる．	能動素子素子の特徴を理解し，それらを用いた基本的な回路について，原理および特性を理解できない．
評価項目2	増幅回路について，原理および特性を正確に理解し，定量的に解析できる．	増幅回路について，原理および特性を理解し，解析できる．	増幅回路について，原理および特性を理解できない．

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達度目標 (F) 学習・教育到達度目標 (H)

Teaching Method

Outline	ダイオード，トランジスタや電界効果トランジスタ(FET)などの能動素子の動作原理とそれを利用した基礎的な回路について解説する．
Style	教科書から取捨選択し理解しやすい順序に並べ替えて講義形式で進める．最初に講義を行い概略を説明したあと、各自が自主学習を行う。質問等の個人指導を行い、不明な点を解消する。
Notice	授業中は集中して理解に努め、わからないところを授業中に質問して解決していくプロセスが求められる。毎回復習が必要。課題が出された場合は必ず期限までに提出しなければならない。合格の対象としない欠席条件(割合) 1/3以上の欠課

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	半導体	半導体の種類および半導体内の電気伝導原理について理解できる．
		2nd	ダイオード	pn接合の整流作用および電圧電流特性について理解できる．
		3rd	トランジスタ	トランジスタの基本構造，動作および静特性について理解できる．
		4th	固定バイアス回路とトランジスタの動作	固定バイアス回路におけるトランジスタの動作について理解できる．
		5th	熱暴走と各種バイアス回路	熱暴走と各種バイアス回路について理解できる．
		6th	トランジスタの周波数特性と３つの接地方式	トランジスタの周波数特性と３つの接地方式の違いについて理解できる．
		7th	復習	これまでの内容の理解を確実なものとする．
		8th	中間試験	
	2nd Quarter	9th	トランジスタの小信号等価回路	トランジスタの小信号等価回路について理解できる．
		10th	小信号等価回路による解析	小信号等価回路を用いた解析手法について理解できる．
		11th	小信号等価回路による解析２	３つの周波数領域において等価回路の違いについて理解できる．
		12th	ミラー効果とその応用	ミラー効果と負性容量増幅回路について理解できる．
		13th	ミラー効果の応用とピーキング、エミッタフォロワ─	ミラー効果のＯＰアンプへの適用とピーキングの考え方について理解できる．またエミッタフォロワの特徴と解析について知る．
		14th	FETの種類と動作原理	６種類のＦＥＴの動作原理と違いについて理解できる．
		15th	復習	これまでの内容の理解を確実なものとする。
		16th	期末演習	

Evaluation Method and Weight (%)

	試験	その他	Total
Subtotal	70	30	100
基礎的能力	0	0	0

| 専門的能力 | 70 | 30 | 100 |
| 分野横断的能力 | 0 | 0 | 0 |

Akashi College		Year	2021		Course Title	Electronic Circuits II

Course Information

Course Code	0017		Course Category	Specialized / Compulsory
Class Format	Lecture		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	4th
Term	Second Semester		Classes per Week	2
Textbook and/or Teaching Materials	伊東規之：「テキストブック電子回路」，日本理工出版会			
Instructor	OHMUKAI Masato			

Course Objectives

以下の能力を修得することを目標とする.
1) 電力増幅回路の仕組みを正確に理解し、電源効率を考察できる。
2) 負帰還回路と発振回路の原理を定量的に理解できる。
3) 演算増幅器を用いた回路について，原理および特性を正確に理解できる.
4) 発振・変調・復調回路について，原理および特性を正確に理解し，解析,設計できる.

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目1	電力増幅回路の仕組みを正確に理解し、電源効率を考察できる。	電力増幅回路の仕組みを理解し、電源効率をある程度考察できる。	電力増幅回路の仕組みを理解できず、電源効率を考察できない。
評価項目2	負帰還回路と発振回路の原理を定量的に理解できる。	負帰還回路と発振回路の原理を理解できる。	負帰還回路と発振回路の原理を理解できない。
評価項目3	演算増幅器を用いた回路について，原理および特性を正確に理解し，解析,設計できる.	演算増幅器を用いた回路について，原理および特性を理解し，解析,設計できる.	演算増幅器を用いた回路について，原理および特性を理解できない.
評価項目4	発振・変調・復調回路について，原理および特性を正確に理解できる.	発振・変調・復調回路について，原理および特性を理解できる.	発振・変調・復調回路について，原理および特性を理解できない.

Assigned Department Objectives

Teaching Method

Outline	ダイオード，トランジスタや電界効果トランジスタ(FET)などの能動素子の動作原理とそれを利用した基礎的な回路について解説する.
Style	教科書から取捨選択し理解しやすい順序に並べ替えて講義形式で進める．最初に講義を行い概略を説明したあと、各自が自主学習を行う。質問等の個人指導を行い、不明な点を解消する。
Notice	授業中は集中して理解に努め、わからないところを授業中に質問して解決していくプロセスが求められる。毎回復習が必要。課題が出された場合は必ず期限までに提出しなければならない。課題提出が締切を越えると未提出扱いとなる。合格の対象としない欠席条件(割合) 1/3以上の欠課

Characteristics of Class / Division in Learning

☑ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	トランス結合増幅回路、同調増幅回路、タッピング	トランス結合増幅回路の動作を理解し、同調増幅回路の構成と特徴を理解できる。
		2nd	最大定格とA級電力増幅回路	最大定格の概念が理解できる。A級電力増幅回路について電源効率を計算できる。
		3rd	B級プッシュプル電力増幅回路	B級プッシュプル電力増幅回路の動作原理が理解でき、ＳＥＰＰ回路とその応用回路について動作が理解できる。
		4th	C級電力増幅回路と負帰還増幅回路	C級電力増幅回路の動作について理解でき、負帰還増幅回路の特徴が理解できる。
		5th	負帰還増幅回路の応用例とＬＣ発振回路	負帰還増幅回路の応用例について理解でき、各種ＬＣ発振回路が理解できる。
		6th	水晶発振回路とＲＣ発振回路	水晶発振回路と各種ＲＣ発振回路についてその原理が理解できる。
		7th	復習	これまでの内容の理解を確実なものとする.
		8th	中間試験	
	4th Quarter	9th	変調と復調およびベース変調回路	変調と復調の原理について理解できる。またベース変調回路の仕組みが理解できる。
		10th	コレクタ変調とＡＭ復調回路。ＦＭ変調回路とＦＭ復調回路	コレクタ変調の仕組みが理解でき、ＦＭの変調回路と復調回路についてその動作原理が理解できる。
		11th	電源回路	整流回路、平滑回路、安定化回路について理解できる。
		12th	ＣＲを用いた積分回路と微分回路	ＣＲを用いた積分回路と微分回路を定量的に解析できる。
		13th	ＯＰアンプ	ＯＰアンプの各種回路を定量的に理解できる。
		14th	クリッパーとクランパー	クリッパーとクランパーの動作原理を理解できる。
		15th	復習	これまでの内容の理解を確実なものとする。
		16th	期末演習	

Evaluation Method and Weight (%)

	試験	その他	Total
Subtotal	70	30	100
基礎的能力	0	0	0
専門的能力	70	30	100
分野横断的能力	0	0	0

Akashi College		Year	2021		Course Title	Control Engineering Ⅰ

Course Information

Course Code	0018		Course Category	Specialized / Compulsory
Class Format	Lecture		Credits	Academic Credit: 2
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	4th
Term	Second Semester		Classes per Week	2
Textbook and/or Teaching Materials	「制御工学－技術者のための，理論・設計から実装まで－」豊橋技術科学大学・高等専門学校制御工学教育連携プロジェクト　編			
Instructor	KAMI Yasushi			

Course Objectives

1. 伝達関数を用いてシステムの入出力特性を表現できる
2. ブロック線図を用いたシステム表現が理解できる
3. 過渡特性について，ステップ応答を用いて説明できる
4. 定常特性について，定常偏差を用いて説明できる
5. 周波数特性について，ボード線図を用いて説明できる
6. フィードバック制御系の安定判別法（ナイキストの安定判別法）について説明できる

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
伝達関数によるシステムの表現	伝達関数を正確に導出できる	伝達関数の導出方法を説明できる	伝達関数の導出方法を知らない
ブロック線図によるシステムの表現	直列結合，並列結合，フィードバック結合から構成されるブロック線図を簡単化できる	ブロック線図の直列結合，並列結合，フィードバック結合をすべて簡単化できる	ブロック線図の構成要素を理解できない
過渡特性の評価	ステップ応答における過渡特性の評価指標について，すべて説明できる	ステップ応答における過渡特性の評価指標について，いくつかを説明できる	過渡特性の評価指標について，全く説明できない
定常特性の評価	定常偏差の求め方を導出できた上で，正確に定常偏差を算出できる	定常偏差の求め方（計算公式）を知っている	定常偏差について説明できない
ボード線図による周波数応答の表現	基本要素を結合して得られるシステムの周波数応答をボード線図で表現できる	基本要素のいくつかについて，周波数応答をボード線図で表現できる	ボード線図を知らない
ナイキストの安定判別法	ナイキストの安定判別法を用いて，フィードバック制御系の安定性を正確に判別できる	ナイキストの安定判別法による安定判別の方針を説明できる	ナイキストの安定判別法を説明できない

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達度目標 (F) 学習・教育到達度目標 (H)

Teaching Method

Outline	日常の生活の中で我々はあまり意識せずに使っているが，車やエアコン，冷蔵庫など，身の回りにあるほとんど全ての機器に自動制御の機能が取り入れられている．　本講義では，伝達関数、周波数応答を中心とした古典制御の基礎を学ぶ．また，適宜課す演習を通して，講義内容の理解を深める．
Style	伝達関数，ブロック線図，時間応答，周波数応答，安定性に関する基礎事項を一通り説明する．ほぼ毎回の授業で，講義内容を復習するための自学自習用課題を出題する．
Notice	適宜課す演習は自分で考えて実際に解き，計算に慣れておくこと．本科目は，ラプラス変換・逆変換の基礎知識を前提とする．本科目は学修単位適用科目であるため，課題の提出状況やその内容により，合格の対象とならないことがある．具体的な条件は講義中に示す．本科目は，授業で保証する学習時間と，予習・復習及び課題レポート作成に必要な標準的な自己学習時間の総計が，90時間に相当する学習内容である．合格の対象としない欠席条件(割合)　1/3以上の欠課

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	イントロダクション	講義の目的，成績評価方法等について理解する フィードバック制御の仕組みを説明できる
		2nd	微分方程式によるモデリング	典型的なシステムについて，動特性を表現するモデル（微分方程式）を導出できる
		3rd	伝達関数	ラプラス変換を用いて伝達関数を導出できる
		4th	ブロック線図	直列結合，並列結合，フィードバック結合を簡単化できる 上記の3つの結合から構成されるブロック線図を簡単化できる
		5th	基本要素とその時間応答	基本要素（6種類）の名称を説明できる 時間応答の観点から，基本要素の特性を説明できる
		6th	時間応答の評価指標	ステップ応答を用いて過渡特性の評価指標を説明できる 定常偏差について説明できる 定常偏差を算出できる
		7th	復習	前半の講義内容の復習を行う．
		8th	中間試験	
	4th Quarter	9th	周波数応答とは	周波数応答の定義を説明できる 周波数伝達関数とゲイン・位相の対応を説明できる

		10th	ベクトル軌跡	基本要素のベクトル軌跡の特徴を説明できる ベクトル軌跡の概形を描くことができる
		11th	ボード線図	微分要素，積分要素，1次遅れ要素，2次遅れ要素のボード線図の特徴を説明できる
		12th	ボード線図の合成	ボード線図を合成できる
		13th	制御系の安定性	安定条件を説明できる 伝達関数の極の位置から安定判別できる
		14th	フィードバック制御系の安定判別法	ナイキストの安定判別法を用いてフィードバック制御系の安定判別ができる
		15th	復習	後半の講義内容の復習を行う．
		16th	期末試験	

Evaluation Method and Weight (%)

	試験	演習課題	相互評価	態度	ポートフォリオ	その他	Total
Subtotal	80	20	0	0	0	0	100
基礎的能力	0	0	0	0	0	0	0
専門的能力	80	20	0	0	0	0	100
分野横断的能力	0	0	0	0	0	0	0

Akashi College		Year	2021		Course Title	Preliminaries to Graduation Thesis

Course Information

Course Code	0019		Course Category	Specialized / Compulsory
Class Format	Seminar		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	4th
Term	Second Semester		Classes per Week	2
Textbook and/or Teaching Materials				
Instructor	All faculty of the department			

Course Objectives

(1) Can continuously explore things.
(2) Can summarize the results obtained for the project undertaken.
(3) Can consider the research theme in various approaches, and create flexible and innovative ideas.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Can continuously explore things and obtain results that match with the theme.	Can continuously explore things.	Cannot continuously explore things.
Achievement 2	Can properly summarize the results obtained on the theme addressed.	Can summarize the results obtained on the theme addressed.	Cannot summarize the results obtained on the theme addressed.
Achievement 3	Can consider the research theme in various approaches, and create flexible and innovative ideas. In addition, can choose the appropriate approach.	Can consider the research theme in various approaches, and create flexible and innovative ideas.	Cannot consider the research theme in various approaches, or create flexible and innovative ideas.

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達度目標 (F)

Teaching Method

Outline	The aim of this course is to develop the basic abilities necessary for graduation research in the fifth year. Students will gain the basic knowledge necessary to address a research theme and examine how to approach them.
Style	Themed research will be conducted by multiple faculty members (laboratories), and students will be assigned to one of them. In accordance with the instructions of the supervisor of the laboratory they are assigned to, students will conduct lecture-based learning, document research, experiments, simulations, etc.
Notice	Engage in research actively and continuously. Students who spend less than 22.5 hours on research will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☑ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Laboratory assignments	After learning the research details of each laboratory, students can apply for the laboratory they wish to join.
		2nd	Themed research	Conduct lecture-based learning, document research, experiments, simulations, etc. under the supervisor.
		3rd	Same as above	Same as above
		4th	Same as above	Same as above
		5th	Same as above	Same as above
		6th	Same as above	Same as above
		7th	Same as above	Same as above
		8th	Same as above	Same as above
	4th Quarter	9th	Same as above	Same as above
		10th	Same as above	Same as above
		11th	Same as above	Same as above
		12th	Same as above	Same as above
		13th	Same as above	Same as above
		14th	Preparing a resume for themed research presentation	Can summarize the results of the themed research and prepare a resume for the presentation.
		15th	Themed research presentation	Can give an oral presentation on the results of the themed research.
		16th	No final exam	

Evaluation Method and Weight (%)

	Initiative	Presentation	Total

Subtotal	50	50	100
Basic Proficiency	0	0	0
Specialized Proficiency	50	50	100
Cross Area Proficiency	0	0	0

Akashi College		Year	2021		Course Title	Applied Mathematics

Course Information

Course Code	0020		Course Category	Specialized / Compulsory
Class Format	Lecture		Credits	School Credit: 4
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	4th
Term	Year-round		Classes per Week	4
Textbook and/or Teaching Materials				
Instructor	OGASAWARA Hiromichi			

Course Objectives

(1) Can make a deductive inference based on basic matters, including reading and writing logical sentences including equations.
(2) Can perform basic calculations in Fourier analysis, and apply them to engineering and physics on a basic level.
(3) Can perform basic calculations in vector calculus, and apply them to engineering and physics on a basic level.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Can accurately make a deductive inference based on basic matters.	Can make a deductive inference based on basic matters.	Cannot make a deductive inference based on basic matters.
Achievement 2	Can fully perform basic calculations in Fourier analysis, and fully apply them to engineering and physics on a basic level.	Can perform basic calculations in Fourier analysis, and apply them to engineering and physics on a basic level.	Cannot perform basic calculations in Fourier analysis, and apply them to engineering and physics on a basic level.
Achievement 3	Can fully perform basic calculations in vector calculus, and fully apply them to engineering and physics on a basic level.	Can perform basic calculations in vector calculus, and apply them to engineering and physics on a basic level.	Cannot perform basic calculations in vector calculus, and apply them to engineering and physics on a basic level.

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達度目標 (G)

Teaching Method

Outline	In this course, we will learn the basics of the following topics based on the calculus and linear algebra learned so far. ・ First semester: Fourier analysis (including topics on the Laplace transform) ・ Second semester: Vector calculus (including topics on complex functions of one variable) These mathematics are also applied to engineering and physics, so this class will also cover them, including basic applications.
Style	Classes will be taught in a lecture style, and there will also be exercises and quizzes.
Notice	Do pre-study and review (including problem exercises). In problem exercises, do not try to remember the steps to solve a problem, but rather try to solve it yourself based on definitions and basic theorem and ideas. Also, if necessary, review the content learned during the previous years. Students can earn extra points by submitting voluntary assignments, and lose their points depending on their attitude, etc. in the class. Students who miss 1/3 or more of classes will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Review of calculus Organize data	Can handle the basic matters of calculus that's necessary for future learning. Can organize data.
		2nd	Organize data Laplace transform	Can organize data. Can calculate and discuss based on the basic matters of the Laplace transform.
		3rd	Laplace transform	Can calculate and discuss based on the basic matters of the Laplace transform.
		4th	Laplace transform Application to vibration phenomena	Can calculate and discuss based on the basic matters of the Laplace transform. Can apply the Laplace transform to vibration phenomena.
		5th	Application to vibration phenomena	Can apply the Laplace transform to vibration phenomena.
		6th	Fourier series	Can calculate and discuss based on the basic matters of a Fourier series.
		7th	Fourier series	Can calculate and discuss based on the basic matters of a Fourier series.
		8th	Midterm exam	
	2nd Quarter	9th	Fourier series	Can calculate and discuss based on the basic matters of a Fourier series.
		10th	Fourier transform	Can calculate and discuss based on the basic matters of a Fourier transform.

		11th	Fourier transform	Can calculate and discuss based on the basic matters of a Fourier transform.
		12th	Wave equation	Can handle a wave phenomenon based on the laws of motion and Fourier analysis methods.
		13th	Wave equation Heat equation	Can handle a wave phenomenon based on the laws of motion and Fourier analysis methods. Can handle a heat conduction phenomena based on the law of conservation and Fourier analysis methods.
		14th	Heat equation	Can handle a heat conduction phenomena based on the law of conservation and Fourier analysis methods.
		15th	Supplementary lesson on the Laplace transform	Can calculate and discuss matters related to delta function and convolution.
		16th	Final exam	
2nd Semester	3rd Quarter	1st	Review and supplementary lesson on vector calculations	Can handle the basic matters of vector calculations that's necessary for future learning.
		2nd	Curves	Can handle curves using parameters.
		3rd	Curves Line integrals	Can handle curves using parameters. Can calculate and discuss based on the basic matters of line integrals.
		4th	Line integrals	Can calculate and discuss based on the basic matters of line integrals.
		5th	Gradient	Can calculate and discuss based on the basic matters of the gradient vector.
		6th	Gradient Conservative forces and potential energy	Can calculate and discuss based on the basic matters of the gradient vector. Can handle conservative forces and potential energy based on the vector calculus method.
		7th	Surfaces and surface integrals	Can handle surfaces using parameters and calculate and discuss based on the basic matters of surface integrals.
		8th	Midterm exam	
	4th Quarter	9th	Surfaces and surface integrals	Can handle surfaces using parameters and calculate and discuss based on the basic matters of surface integrals.
		10th	Derivative of vector fields and integral theorem	Can handle derivative of vector fields, including the method using integral theorem.
		11th	Derivative of vector fields and integral theorem	Can handle derivative of vector fields, including the method using integral theorem.
		12th	Derivative of vector fields and integral theorem Application to electromagnetism	Can handle derivative of vector fields, including the method using integral theorem. Can handle the basic matters of electromagnetism based on the vector calculus method.
		13th	Application to electromagnetism Overview of the theory of functions of a complex variable	Can handle the basic matters of electromagnetism based on the vector calculus method. Can calculate and discuss based on the basic matters of the theory of functions of a complex variable.
		14th	Overview of the theory of functions of a complex variable	Can calculate and discuss based on the basic matters of the theory of functions of a complex variable.
		15th	Overview of the theory of functions of a complex variable	Can calculate and discuss based on the basic matters of the theory of functions of a complex variable.
		16th	Final exam	

Evaluation Method and Weight (%)

	Examination	Exercises / Short test	Total
Subtotal	60	40	100
Basic Proficiency	60	40	100
Specialized Proficiency	0	0	0
Cross Area Proficiency	0	0	0

Akashi College		Year	2021		Course Title	Electromagnetics II

Course Information

Course Code	0021		Course Category	Specialized / Compulsory
Class Format	Lecture		Credits	School Credit: 2
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	4th
Term	Year-round		Classes per Week	2
Textbook and/or Teaching Materials	1)小塚洋司著、新装版「電磁気学」、森北出版　　2)後藤憲一、山崎修一共編、「詳解電磁気学演習」、共立出版			
Instructor	OHMUKAI Masato			

Course Objectives

(1)磁気に関する諸法則を理解し、説明することができる。
(2)Maxwell 方程式から導かれる諸性質について説明できる。

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目[1]	磁気に関する諸法則を理解し、詳しく説明することができる。	磁気に関する諸法則を理解し、説明することができる。	磁気に関する諸法則を理解し、説明することができない。
評価項目[2]	Maxwell 方程式から導かれる諸性質について詳しく説明できる。	Maxwell 方程式から導かれる諸性質について説明できる。	Maxwell 方程式から導かれる諸性質について説明できない。

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達度目標 (F) 学習・教育到達度目標 (H)

Teaching Method

Outline	電気磁気学Iで学んだ静電界の知識を基礎として、主として磁気について学習する。その後Maxwell方程式として電気磁気学の体系全体を身につけ、電磁波についても学ぶ。
Style	最初に講義を行い概略を説明したあと、各自が自主学習を行う。質問等の個人指導を行い、不明な点を解消する。
Notice	３年の電気磁気学Ⅰの知識がないと単位取得はかなり困難である。授業中は集中して理解に努め、わからないところを授業中に質問して解決していくプロセスが求められる。毎回復習が必要。課題が出された場合は必ず期限までに提出しなければならない。課題提出が締切を越えると未提出扱いとなる。合格の対象としない欠席条件(割合)　1/3以上の欠課

Characteristics of Class / Division in Learning

☑ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	クーロンの法則、ガウスの定理	クーロンの法則、ガウスの定理が理解できている。電荷と電界と電位の関係を説明できる。
		2nd	誘電体とコンデンサ	誘電分極に関する物理量の関係が説明できる。コンデンサの物理量の関係が説明できる。
		3rd	磁界と磁力線	磁界の概念を理解し、コイルが磁気２重層と透過であることが理解できる。
		4th	アンペアの周回積分の法則、磁位	アンペアの周回積分の法則を用いて磁界が計算できる。磁気双極子モーメントを知る。
		5th	ビオサバールの法則	微小電流による磁界の算出ができる。
		6th	磁界による力	電流によって生じる力の表現を知る。
		7th	復習	これまでの内容理解の不十分なところをなくす。
		8th	中間試験	６０点を取得する。
	2nd Quarter	9th	磁化と磁束密度	磁化の概念を理解し、磁束密度について知る。
		10th	透磁率と磁化率と境界条件	透磁率と磁化率の概念を理解しその関係を知る。また境界条件について知る。
		11th	磁極と減磁力と磁気シールド	磁極に関するクーロンの法則を理解すると共に、単極磁極が存在しないことを式で表せる。
		12th	ベクトルポテンシャル	ベクトルポテンシャルの定義を書くことができる。またポアソンの式に対応する式を書ける。
		13th	磁界のエネルギーとB-H曲線	磁界の持つエネルギーを書くことができ、B-H曲線について理解する。
		14th	磁気回路	磁気回路に関する物理量を知る。電磁石が鉄を吸引する力を計算できる。
		15th	復習	これまでの内容理解の不十分なところをなくす。
		16th	期末試験	６０点以上を取得する。
2nd Semester	3rd Quarter	1st	インダクタンスとノイマンの公式	自己インダクタンスと相互インダクタンスの定義を知りノイマンの公式を導ける。
		2nd	インダクタンスの接続と結合係数およびエネルギー	インダクタンスの接続について理解し、結合係数の意味を知る。
		3rd	電磁誘導法則とローレンツ力	ファラデーの電磁誘導の法則を理解し、ローレンツ力との関連を知る。
		4th	電磁誘導法則の拡張	ファラデーの電磁誘導の法則の積分形と微分形の関係をしり、ローレンツ力を導出できる。
		5th	自己誘導作用と回路に働く力	自己誘導作用について理解し回路に働く力を算出できる。

		6th	表皮効果と渦電流	表皮効果について定量的に理解し、表皮厚について知る。
		7th	復習	これまでの内容理解の不十分なところをなくす。
		8th	中間テスト	６０点を取得する。
	4th Quarter	9th	変位電流とマックスウェルの方程式	変位電流の概念を理解し、マックスウェルの４つの方程式が書けるようになる。
		10th	波動方程式と電磁波の性質	波動方程式を導出でき、電磁波の性質を定量的に説明できる。
		11th	電磁波の伝搬特性	電磁波伝搬に関する物理量について理解する。
		12th	電磁波の境界条件	電磁波に関する境界条件を定量的に知る。
		13th	平面波の反射と透過	電磁波の透過と反射に関する量的関係を知る。
		14th	ポインティングベクトル	ポインティングベクトルの定義を知り、その性質を説明できる。
		15th	復習	これまでの内容理解の不十分なところをなくす。
		16th	期末試験	６０点以上を取得する。

Evaluation Method and Weight (%)

	試験	課題	相互評価	態度	ポートフォリオ	その他	Total
Subtotal	70	0	0	0	0	30	100
基礎的能力	0	0	0	0	0	0	0
専門的能力	70	0	0	0	0	30	100
分野横断的能力	0	0	0	0	0	0	0

Akashi College	Year	2021	Course Title	Solid State Physics A

Course Information

Course Code	0022	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	Academic Credit: 2
Department	Electrical and Computer Engineering Electrical Engineering Course	Student Grade	4th
Term	First Semester	Classes per Week	2
Textbook and/or Teaching Materials	萩野俊郎「エッセンシャル応用物性論」朝倉書店		
Instructor	OHMUKAI Masato		

Course Objectives

１）シュレーディンガー方程式を理解し、これを利用して原子内の電子状態を定量的に理解する。
２）原子の化学結合について理解し、固体のバンド理論についてに知る。
３）ホール効果について定量的に説明できる。
４）ｐｎ接合の電流電圧特性を定量的に理解する
５）空乏層容量を導出できる

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目[1]	シュレーディンガー方程式を深く理解し、これを利用して原子内の電子状態を定量的に十分理解する。	シュレーディンガー方程式を理解し、これを利用して原子内の電子状態を定量的に理解する。	シュレーディンガー方程式を理解し、これを利用して原子内の電子状態を定量的に理解しない。
評価項目[2]	原子の化学結合について深く理解し、固体のバンド理論についてに詳細に知る。	原子の化学結合について理解し、固体のバンド理論についてに知る。	原子の化学結合について理解し、固体のバンド理論についてに知らない。
評価項目[3]	ホール効果について定量的に詳しく説明できる。	ホール効果について定量的に説明できる。	ホール効果について定量的に説明できない。
評価項目[4]	ｐｎ接合の電流電圧特性を定量的に深く理解する	ｐｎ接合の電流電圧特性を定量的に理解する。	ｐｎ接合の電流電圧特性を定量的に理解しない。
評価項目[5]	空乏層容量を詳細に導出できる。	空乏層容量を導出できる。	空乏層容量を導出できない。

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達目標 (H)

Teaching Method

Outline	電子デバイスの中で固体の役割は極めて大きい。本講義では電子の基礎となる前期量子論から固体中の電子状態について学び、金属および半導体内での電子の挙動を基本的な観点から定量的に学ぶ。
Style	最初に講義を行い概略を説明したあと、各自が自主学習を行う。質問等の個人指導を行い、不明な点を解消する。課題レポートにより、理解を深めたり、学習範囲を広げていく。
Notice	授業中は集中して理解に努め、わからないところを授業中に質問して解決していくプロセスが求められる。毎回復習が必要。本科目は授業で保証する学習時間と、予習、復習および課題レポート作成に必要な標準的な自己学習時間の総計が９０時間に相当する学習内容である。課題提出が締切を越えると未提出扱いとなる。合格の対象としない欠席条件(割合) 1/3以上の欠課

Characteristics of Class / Division in Learning

☑ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	量子論、シュレーディンガー方程式	光および電子の波動性と粒子性について理解しシュレーディンガー方程式を導出できる。
		2nd	ボーアの理論と原子軌道	ボーアの理論を導出して軌道半径と軌道のエネルギーを算出できる。原子軌道の種類を知る。
		3rd	共有結合とエネルギーバンド	共有結合の起源および混成軌道について知り、多数の原子が集まるとエネルギー準位がバンドになることを知る。
		4th	電気伝導、位相速度と群速度	電気伝導を示すドゥルーデの理論を導き出せ、位相速度と群速度の定義を知る。
		5th	分散関係と有効質量とブリルアンゾーン	光と電子の分散関係を導出し、有効質量を導出できる。正孔の概念を理解する。ブリルアンゾーンについて知る。
		6th	自由電子論、状態密度	シュレーディンガー方程式を解いて運動量の量子化を導ける。また電子の状態密度の計算を行える。
		7th	ホール効果と移動度	ホール効果を定量的に知り、ホール効果の実験結果と導電率から移動度を算出できる。
		8th	中間試験	６０点以上を取得する。
	2nd Quarter	9th	半導体内のキャリヤ統計Ｉ	半導体内のキャリヤ密度を定量的に導出できる。有効状態密度の概念を理解する。
		10th	半導体内のキャリヤ統計ＩＩ	ＮＰ積の性質を理解する。キャリヤ密度の温度依存性に3種類の領域があることを知る。
		11th	半導体と金属の接触	半導体と金属が接触したとき、2種類の状態が実現されることを定性的に理解する。
		12th	アインシュタインの関係式	拡散係数と移動度の関係を示すアインシュタインの関係式を導出できる。さらに少数キャリヤ注入の式を導出できる。

		13th	ＰＮ接合のＩ－Ｖ特性	ＰＮ接合のＩ－Ｖ特性を定量的に導出できる。
		14th	空乏層の容量	ＰＮ接合における空乏層の容量を定量的に導出でき、拡散電位を実験で求める方法を知る。
		15th	復習	これまでの内容を復習し頭を整理する。余裕があればドリフトトランジスタについて知る。
		16th	期末試験	６０点以上を取得する。

Evaluation Method and Weight (%)

	試験	課題	相互評価	態度	ポートフォリオ	その他	Total
Subtotal	70	0	0	0	0	30	100
基礎的能力	0	0	0	0	0	0	0
専門的能力	70	0	0	0	0	30	100
分野横断的能力	0	0	0	0	0	0	0

Akashi College		Year	2021		Course Title	Experiments of Electrical Engineering I

Course Information

Course Code	0023		Course Category	Specialized / Compulsory
Class Format	Experiment		Credits	School Credit: 4
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	4th
Term	Year-round		Classes per Week	4
Textbook and/or Teaching Materials				
Instructor	KAMI Yasushi,HIROTA Atsushi,TERASAWA Shinichi,HIRANO Masatsugu,NOMURA Hayato			

Course Objectives

1. Can actively participate in experiments by group and carry out experiments in cooperation with the group members.
2. Can conduct experiments in a planned manner based on the basic ability, and analyze the results of an experiment.
3. Can summarize the results of a experiments in a report with correct writing expressions.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Can actively participate in experiments by group and carry out experiments in cooperation with the group members.	Can carry out experiments in cooperation with the group members.	Cannot carry out experiments.
Achievement 2	Can conduct experiments in a planned manner and analyze the results of an experiment.	Can analyze the results of the experiments.	Cannot analyze the results of an experiment.
Achievement 3	Can summarize the results of an experiment in a report with correct writing expressions and submit in time.	Can summarize the results of an experiment in a report with correct writing expressions.	Cannot summarize the results of an experiment in a report.

Assigned Department Objectives

学習・教育到達度目標 (B) 学習・教育到達度目標 (E) 学習・教育到達度目標 (G)

Teaching Method

Outline	The goal of this course is to acquire the ability to solve new problems practically while understanding and confirming the knowledge and techniques of electrical information acquired so far through experimental themes. Furthermore, the course requires students to submit reports on each theme, in order to help them learn necessary writing expressions for scientific reports. The experiments will be conducted by groups, to help students develop autonomy, coordination, planning, and leadership. E-exchange will supervise the measurement circuits; the above, controls; E new teacher 2 and Terasawa, circuits and microcomputers; and Hirota, power circuits. The experiments in weeks 2 to 5 of the first semester and week 4 of the second semester will be supervised by persons engaged in the development of electronic devices and other activities in a company.
Style	Students will conduct experiments on themes closely related to the electrical and electronic fields, such as measurement, circuits, control, and microcomputers, in groups of four to five, and submit a report on them. They will actively conduct experiments give, based on their own necessary preparation and pre-study, and guidance provided on the spot by the instructor of the experiment.
Notice	If all reports have not been received by the due date, students will not receive a passing grade. Students must clean the lab and put away the equipment. Precautions regarding the experiments will be given during the first week of the first and second semesters. Students have to participate in all experiments. Students will not be graded unless they have participated in all experiments.

Characteristics of Class / Division in Learning

☐ Active Learning	☑ Aided by ICT	☑ Applicable to Remote Class	☑ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Experiment guidance	Understand the various precautions related to engineering experiments and the outline of the theme of each experiment.
		2nd	FPGA1 (Circuit design)	Understand logic circuit inputs using IDE (Integrated Development Environment).
		3rd	FPGA2 (emulator debug)	Understand the simulation and debugging of logical circuits using the IDE (Integrated Development Environment).
		4th	FPGA3 (implementation and operation)	Understand circuit implementation in FPGA(Field Programmable Logic Array).
		5th	FPGA4 (evaluation)	Understand the operation, debugging, and evaluation of implementation circuitry with FPGAs.
		6th	Report organization	Can examine and compile the results of the experiment into a report.
		7th	Computer measurement I.	Can perform waveform measurement and processing using a computer and measurement interface.
		8th	Computer Measurement II.	Can fabricate a thermometer using a computer and an interface thermistor for measurement.
	2nd Quarter	9th	Report organization	Can examine and compile the results of the experiment into a report.

		10th	Electric motor speed control	Understand how to control the speed of an electric motor.
		11th	Direct current voltage stabilization circuit	Can investigate the characteristics of a voltage stable circuit in a rectification circuit.
		12th	Report organization	Can examine and compile the results of the experiment into a report.
		13th	Oscillation circuits	Can investigate various characteristics for various types of typical oscillation circuits.
		14th	Low frequency amplifier characteristics	Can examine the circuit operation and characteristics of the push-pull amplifier.
		15th	Report organization	Can examine and compile the results of the experiment into a report.
		16th	No final exam	
2nd Semester	3rd Quarter	1st	Experiment guidance	Understand the various precautions related to engineering experiments and the outline of the theme of each experiment.
		2nd	Microcomputer control I	Can build control systems using embedded microcomputers.
		3rd	Microcomputer control II	Can build control systems using embedded microcomputers.
		4th	Microcomputer control III	Can build control systems using embedded microcomputers.
		5th	Report organization	Can examine and compile the results of the experiment into a report.
		6th	Alternating current automatic voltage regulator	Understand the operation of the control system by the AC automatic voltage regulator.
		7th	Report organization	Can examine and compile the results of the experiment into a report.
		8th	Equivalent circuit of the transformer	Can determine the equivalent circuit and constant of the transformer.
	4th Quarter	9th	Report organization	Can examine and compile the results of the experiment into a report.
		10th	Sequence control I	Understand the basics of relay sequence control.
		11th	Report organization	Can examine and compile the results of the experiment into a report.
		12th	Sequence control II	Can construct a relay sequence control method of a control circuit that meets the specified specification.
		13th	Report organization	Can examine and compile the results of the experiment into a report.
		14th	Variable speed control of the inductive electric motor by means of a PWM inverter	Understand the principles of PWM inverters and speed control of inductive electric motors.
		15th	Summarizing and organizing	Can summarize and organize the experiment.
		16th	No final exam	

Evaluation Method and Weight (%)

	Report	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	80	0	0	20	0	0	100
Basic Proficiency	0	0	0	0	0	0	0
Specialized Proficiency	80	0	0	20	0	0	100
Cross Area Proficiency	0	0	0	0	0	0	0

Akashi College		Year	2021		Course Title	Off-Campus Practical Training A

Course Information

Course Code	0024		Course Category	Specialized / Elective
Class Format	Practical training		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	4th
Term	Year-round		Classes per Week	1
Textbook and/or Teaching Materials				
Instructor	All faculty of the department			

Course Objectives

(1) Can experience some of the actual technical activities related to engineering.
(2) Can use slides to report on the things they have experientially learned.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Can experience some of the actual technical activities related to engineering collaboratively.	Can experience some of the actual technical activities related to engineering.	Cannot experience some of the actual technical activities related to engineering.
Achievement 2	Can use slides to report on the things they have experientially learned, and be understood by others.	Can use slides to report on the things they have experientially learned.	Cannot use slides to report on the things they have experientially learned.

Assigned Department Objectives

学習・教育到達度目標 (E) 学習・教育到達度目標 (G)

Teaching Method

Outline	Internship is mainly held in companies, government agencies, non-profit corporations, universities, etc. in the fields of electrical and electronic engineering and information engineering. Through this experience, students gain a sense of practical technology and can exert the knowledge in further learning.
Style	Follow the guidance given by instructors at the internship destination.
Notice	Read the internship implementation guidelines carefully and stay in close contact with your year 4 class teacher. Students should actively experience real-world technical activities. Student need to be respectful of courtesies, attire, language, and other behaviors appropriate as an internee. Students who spend less than 5 days or less than 32 hours (shortages within 2 hours may be replenished by such as reporting) will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance (at the end of first semester)	Can understand the precautions of student training and the manners at the training site.
		2nd	Intern (during summer vacation)	Can experience some of the technical activities at the training site.
		3rd	Same as above	Same as above
		4th	Same as above	Same as above
		5th	Same as above	Same as above
		6th	Same as above	Same as above
		7th	Same as above	Same as above
		8th	Same as above	Same as above
	2nd Quarter	9th	Same as above	Same as above
		10th	Same as above	Same as above
		11th	Same as above	Same as above
		12th	Same as above	Same as above
		13th	Same as above	Same as above
		14th	Same as above	Same as above
		15th	Internship reporting (done at the beginning of the second semester, grades will be announced in the middle of the second semester)	Can report the outcome of the internship using slides.
		16th	No final exam	
2nd Semester	3rd Quarter	1st		
		2nd		
		3rd		
		4th		
		5th		
		6th		
		7th		

		8th		
	4th Quarter	9th		
		10th		
		11th		
		12th		
		13th		
		14th		
		15th		
		16th		

Evaluation Method and Weight (%)

	Training destination evaluation	Report	Presentation	Total
Subtotal	30	30	40	100
Basic Proficiency	0	0	0	0
Specialized Proficiency	30	30	40	100
Cross Area Proficiency	0	0	0	0

Akashi College	Year	2021		Course Title	Off-Campus Practical Training B

Course Information

Course Code	0025		Course Category	Specialized / Elective
Class Format	Practical training		Credits	School Credit: 2
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	4th
Term	Year-round		Classes per Week	2
Textbook and/or Teaching Materials				
Instructor	All faculty of the department			

Course Objectives

(1) Can experience some of the actual technical activities related to engineering.
(2) Can use slides to report on the things they have experientially learned.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Can experience some of the actual technical activities related to engineering collaboratively.	Can experience some of the actual technical activities related to engineering.	Cannot experience some of the actual technical activities related to engineering.
Achievement 2	Can use slides to report on the things they have experientially learned, and be understood by others.	Can use slides to report on the things they have experientially learned.	Cannot use slides to report on the things they have experientially learned.

Assigned Department Objectives

学習・教育到達度目標 (E) 学習・教育到達度目標 (G)

Teaching Method

Outline	Internship is mainly held in companies, government agencies, non-profit corporations, universities, etc. in the fields of electrical and electronic engineering and information engineering. Through this experience, students gain a sense of practical technology and can exert the knowledge in further learning.
Style	Follow the guidance given by instructors at the internship destination.
Notice	Read the internship implementation guidelines carefully and stay in close contact with your year 4 class teacher. Students should actively experience real-world technical activities. Student need to be respectful of courtesies, attire, language, and other behaviors appropriate as an internee. Students who spend less than 9 days or less than 72 hours (shortages within 4 hours may be replenished by such as reporting) will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance (at the end of first semester)	Can understand the precautions of student training and the manners at the training site.
		2nd	Intern (during summer vacation)	Can experience some of the technical activities at the training site.
		3rd	Same as above	Same as above
		4th	Same as above	Same as above
		5th	Same as above	Same as above
		6th	Same as above	Same as above
		7th	Same as above	Same as above
		8th	Same as above	Same as above
	2nd Quarter	9th	Same as above	Same as above
		10th	Same as above	Same as above
		11th	Same as above	Same as above
		12th	Same as above	Same as above
		13th	Same as above	Same as above
		14th	Same as above	Same as above
		15th	Same as above	Same as above
		16th	No final exam	
2nd Semester	3rd Quarter	1st	Intern (during summer vacation)	Can experience some of the technical activities at the training site.
		2nd	Same as above	Same as above
		3rd	Same as above	Same as above
		4th	Same as above	Same as above
		5th	Same as above	Same as above
		6th	Same as above	Same as above
		7th	Same as above	Same as above

		8th	Same as above	Same as above
	4th Quarter	9th	Same as above	Same as above
		10th	Same as above	Same as above
		11th	Same as above	Same as above
		12th	Same as above	Same as above
		13th	Same as above	Same as above
		14th	Same as above	Same as above
		15th	Internship reporting (done at the beginning of the second semester, grades will be announced in the middle of the second semester)	Can report the outcome of the internship using slides.
		16th	No final exam	

Evaluation Method and Weight (%)

	Training destination evaluation	Report	Presentation	Total
Subtotal	30	30	40	100
Basic Proficiency	0	0	0	0
Specialized Proficiency	30	30	40	100
Cross Area Proficiency	0	0	0	0

Akashi College		Year	2021		Course Title	Solid State Physics B

Course Information

Course Code	0026		Course Category	Specialized / Compulsory
Class Format	Lecture		Credits	Academic Credit: 2
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	4th
Term	Second Semester		Classes per Week	2
Textbook and/or Teaching Materials	萩野俊郎「エッセンシャル応用物性論」朝倉書店			
Instructor	OHMUKAI Masato			

Course Objectives

1）ヴィーデマン・フランツの法則とブロッホの定理について知る。
2）誘電分極に関する事項について知る。
3）磁性体の様々な事項について知る。

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目[1]	ヴィーデマン・フランツの法則とブロッホの定理について深く知る。	ヴィーデマン・フランツの法則とブロッホの定理について知る。	ヴィーデマン・フランツの法則とブロッホの定理について知らない
評価項目[2]	誘電分極に関する事項について深く知る。	誘電分極に関する事項について知る。	誘電分極に関する事項について知らない。
評価項目[3]	磁性体の様々な事項について深く知る。	磁性体の様々な事項について知る。	磁性体の様々な事項について知らない。

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達度目標 (H)

Teaching Method

Outline	電子デバイスの中で固体の役割は極めて大きい。本講義では金属内の電子の性質に加え、誘電体と磁性体の性質について主に学ぶ。
Style	最初に講義を行い概略を説明したあと、各自が自主学習を行う。質問等の個人指導を行い、不明な点を解消する。課題レポートにより、理解を深めたり、学習範囲を広げていく。
Notice	授業中は集中して理解に努め、わからないところを授業中に質問して解決していくプロセスが求められる。毎回復習が必要。本科目は授業で保証する学習時間と、予習、復習および課題レポート作成に必要な標準的な自己学習時間の総計が９０時間に相当する学習内容である。課題提出が締切を越えると未提出扱いとなる。合格の対象としない欠席条件(割合) 1/3以上の欠課

Characteristics of Class / Division in Learning

☑ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	ヴィーデマン・フランツの法則	電気伝導と熱拡散の関係を示すこの法則を基本原理から導出できる。
		2nd	ブロッホの定理、分極率と誘電率	結晶中の固体の電子状態を示すブロッホ関数を中心に知り、分極率と誘電率の定義を電気磁気学の基礎として理解する。
		3rd	クラウジウス・モソッチの式	分極率と誘電率の関係式であるクラウジウス・モソッチの式を導出できる。
		4th	電子分極	電子分極の定量的議論ができる。
		5th	イオン分極	イオン分極を定量的に扱い、LSTの関係式や残留線について知る。
		6th	配向分極とランジュバン関数	配向分極を定量的に扱い、そこに出てくるランジュバン関数の特徴について理解する。
		7th	複素誘電率と誘電損失	複素誘電率の概念について知る、虚数成分が誘電損失に深くかかわっていることを理解する。
		8th	中間テスト	６０点以上を取得する。
	4th Quarter	9th	磁化と磁性体の分類	磁化、磁界、磁束密度の関係式を再度理解し、5種類の磁性体の特徴を知る。
		10th	磁性の原因	磁性の原因として軌道運動による角運動量、スピンによる角運動量について学び、ボーア磁子とランデのg因子について知る。
		11th	５つの磁性体、磁気異方性と磁区構造	５種の磁性体の分類ができ、磁気異方性と磁区構造について学び、磁化曲線におけるヒステリシス特性の原因を理解する。
		12th	磁化率の温度特性	常磁性におけるキュリーの法則とフェリ磁性におけるキュリー・ワイスの法則を導出できる。
		13th	磁性材料の応用	鉄心材料と永久磁石材料についてその特徴を知る。
		14th	磁性体研究の歴史と磁性体のトピックス	磁性体の日本を中心とした発展の歴史を学び、磁性体の個々の応用について学ぶ。
		15th	復習	これまでの内容を総復習する。
		16th	期末試験	６０点以上を取得する。

Evaluation Method and Weight (%)

	試験	課題	相互評価	態度	ポートフォリオ	その他	Total
Subtotal	70	0	0	0	0	30	100
基礎的能力	0	0	0	0	0	0	0
専門的能力	70	0	0	0	0	30	100
分野横断的能力	0	0	0	0	0	0	0

	試験	課題	相互評価	態度	ポートフォリオ	その他	Total
Subtotal	70	0	0	0	0	30	100
基礎的能力	0	0	0	0	0	0	0
専門的能力	70	0	0	0	0	30	100
分野横断的能力	0	0	0	0	0	0	0

Akashi College	Year	2021		Course Title	Computer Architecture

Course Information

Course Code	0027		Course Category	Specialized / Elective
Class Format	Lecture		Credits	Academic Credit: 2
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	4th
Term	First Semester		Classes per Week	2
Textbook and/or Teaching Materials				
Instructor	NOMURA Hayato			

Course Objectives

1. Understand the basic structure and functionality of a computer.
2. Understand the instruction set architecture.
3. Understand the control architecture.
4. Understand the memory architecture.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Understand and can explain the basic structure and functionality of a computer.	Understand the basic structure and functionality of a computer.	Do not understand the basic structure and functionality of a computer.
Achievement 2	Understand and can explain the instruction architecture.	Understand the instruction architecture.	Do not understand the instruction architecture.
Achievement 3	Understand and can explain the control architecture.	Understand the control architecture.	Do not understand the control architecture.
	Understand and can explain the memory architecture.	Understand the memory architecture.	Do not understand the memory architecture.

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達度目標 (F) 学習・教育到達度目標 (G)

Teaching Method

Outline	In this course, students will learn the overview of the basic structure and functionality of a computer, and the theory of the CPU instruction set and executive control, memory, and input/output devices that make up a computer.
Style	Classes will mainly involve lectures, but if necessary, there will be exercises to improve understanding and retention.
Notice	This course's content will amount to 90 hours of study in total. These hours include the learning time guaranteed in classes and the standard self-study time required for pre-study / review, and completing assignment reports. In this class, students are expected to take into account the contents of Operating System held in the first semester, and be conscious of how the CPU, which is the core hardware of a computer, execute a process. Students who miss 1/3 or more of classes will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Overview of computer architecture	Understand the basic structure and functionality of a computer.
		2nd	Data representation (1): Fixed-point format, floating-point formats	Understand the fixed-point and floating-point formats for representing numeric data.
		3rd	Data representation (2): Text data, image data	Understand the representation of text data and image data.
		4th	Instruction architecture (1): Basic configuration, instruction set	Understand the basic CPU configuration and instruction set.
		5th	Instruction architecture (2): Instruction formats, addressing mode	Understand the instruction format and addressing mode.
		6th	Instruction architecture (3): Instruction execution sequence	Understand the order in which the instructions are executed.
		7th	Control architecture (1): Control methods	Understand the methods and pipelines for controlling instruction execution.
		8th	Midterm exam	Midterm exam
	2nd Quarter	9th	Control architecture (2): Interrupts	Understand interrupts that change the flow of instruction execution.
		10th	Memory architecture (1): Virtual memory	Understand the mapping between physical and virtual memory.
		11th	Memory architecture (2): Cache memory, paging	Understand cache memory and paging.
		12th	Memory architecture (3): Address translation	Understand the address translation.
		13th	Memory architecture (4): Segmentation method	Understand the segmentation method.
		14th	Input/output architecture (1): Types of input/output devices and their management	Understand the types of input/output devices and their management.
		15th	Input/output architecture (2): Input/output channels	Understand the input and output channels.

		16th	Final exam		Final exam		

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	60	0	0	0	0	40	100
Basic Proficiency	30	0	0	0	0	20	50
Specialized Proficiency	20	0	0	0	0	10	30
Cross Area Proficiency	10	0	0	0	0	10	20

Akashi College		Year	2021		Course Title	Discrete Mathematics

Course Information

Course Code	0028		Course Category	Specialized / Elective
Class Format	Lecture		Credits	School Credit: 2
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	4th
Term	Year-round		Classes per Week	2
Textbook and/or Teaching Materials				
Instructor	HAMADA Yukihiro			

Course Objectives

[1] Can explain what counting is.
[2] Develop self-directed and continuous learning skills by mastering the arguments used in a mathematical proof.
[3] Can think in a recursive manner.
[4] Can explain the generalized concept of being equal and being larger (smaller).
[5] Can explain the basics of graph theory.
[6] Can explain the basics of formal language theory.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Can explain sets and functions in a classified way, and determine whether the cardinalities of two sets are equal	Can explain sets and a functions, and determines whether the cardinalities of two sets are equal	Cannot explain a set and a function, and cannot determines whether the cardinalities of two sets are equal
Achievement 2	Can explain the propositions and predicates, and correctly write a mathematical proof using proof by contraposition and contradiction, and the mathematical induction methods accurately.	Can explain the propositions and predicates, and write a mathematical proof using proof by contraposition and contradiction, and the mathematical induction methods.	Cannot explain the propositions and predicates, and write a mathematical proof using proof by contraposition and contradiction, and the mathematical induction methods.
Achievement 3	Can define sets and functions recursively and correctly.	Can define sets and functions recursively.	Cannot define sets and functions recursively.
Achievement 4	Can explain the equivalence relation, partial orders, and total orders accurately.	Can explain the equivalence relation, partial orders, and total orders.	Cannot explain the equivalence relation, partial orders, and total orders.
Achievement 5	Can explain the path, connectivity, and tree of graph theory accurately.	Can explain the path, connectivity, and tree of graph theory.	Cannot explain the path, connectivity, and tree of graph theory.
Achievement 6	Can use Backus form, context-free grammar, finite automaton, and regular grammar correctly.	Can use Backus form, context-free grammar, finite automaton, and regular grammar.	Cannot use Backus form, context-free grammar, finite automaton, and regular grammar.

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達度目標 (F)

Teaching Method

Outline	Discrete mathematics is a field of mathematics that deals with finite or discrete subjects, and one of the foundations of computer science. In this course, you will learn about sets and functions, mathematical induction and recursive definitions, Backus form and context-free grammar, relationships between sets, graphs and trees, finite automaton and regular grammar.
Style	Classes will be held in a lecture style.
Notice	Make sure you understand the exact definition of the term and get an intuitive image from the formal description. Try to solve the examples or exercise problems yourself and score it against the answer. Students who miss 1/3 or more of classes will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☑ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Basic form	Can use form to represent sets or conditions.
		2nd	The relationship between the sets	Can perform various set operations and can use basic formulas.
		3rd	Function 1/2	Can explain the basics function.
		4th	Function 2/2	Can explain the associative law, inverse function and substitution for injection, surjection, bijection, composition of function, and composition.
		5th	Infinite sets and cardinality 1/2	Can explain the cardinality of a set and can determine if the cardinalities of the two sets are equal.
		6th	Infinite sets and cardinality 2/2	Can explain the counting and cardinality of the continuum.

		7th	Propositions and proof by contradiction	Can explain the propositions and the converse, inverse, and contraposition. Can write mathematical proof using contraposition and proof by contradiction.
		8th	Midterm exam	
	2nd Quarter	9th	Predicate	Can explain a predicate (a function that takes only true or false as a value).
		10th	Propositional logic and its limitation in descriptive ability	Can explain the logical expression of a propositional logic and can represent a statement in a logical expression. Can explain the logical expression of predicate logic.
		11th	Language	Can explain the basics of formal languages.
		12th	Mathematical induction 1 of 2	Can mathematical proof by induction
		13th	Mathematical induction 2 of 2	Can write mathematical proof using the complete induction. Can explain the dual induction.
		14th	Recursive definition	Can define sets, functions, etc. recursively.
		15th	Backus form and context-free grammar	Can handle Backus form and context-free grammar.
		16th	Final exam	
2nd Semester	3rd Quarter	1st	Binary relation 1 of 2	Can explain the basics of binary relation.
		2nd	Binary relation 2 of 2	Can calculate composition and exponentiation of binary relation.
		3rd	Equivalence relation 1/2	Can explain the equivalence relation, which is a generalization of the concept of equal.
		4th	Equivalence relation 2/2	Can handle equivalence class, quotient set, and subdivisions of equivalence relation.
		5th	Order 1 of 2	Can explain the partially ordered set and total order of the inequality (=) generalization.
		6th	Order 2 of 2	Can handle the upper extremum, lower extremum, maximum, and minimum values of a partially ordered set, and can explain the above (below) boundary.
		7th	Illustration of binary relation	Can illustrate the binary relation as a directed graph.
		8th	Midterm exam	
	4th Quarter	9th	Hasse diagram, topological sort, and transitive closure	Can draw a Hasse diagram of partially ordered set, and can explain the closure of topological sort and transitive.
		10th	Graph basics 1 of 2	Can explain the basics of graphs.
		11th	Graph basics 2 of 2	Can explain n-partite graph and several kinds of paths in a graph. Also, can represent a graph by adjacency matrix, adjacency list and incidence matrix.
		12th	The connectivity of a graph	Can explain the diameter, radius, connected component, cut vertex, bridge, connectivity and edge connectivity. Also, can explain n-connected and n-edge connected.
		13th	Tree	Can explain the fundamental concepts and theorems about trees. Also, can explain ordered tree, positional tree, binary tree and n-ary tree.
		14th	Finite automaton and nondeterministic finite automaton	Can define FA and NFA formally and draw their state transition diagrams. Also, can determine the language that they accept.
		15th	Regular grammar and regular expression	Can define right linear grammar and left linear grammar formally, and determine the language that they generate. Can represent a given language by regular expression.
		16th	Final exam	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	100	0	0	0	0	0	100
Basic Proficiency	0	0	0	0	0	0	0
Specialized Proficiency	100	0	0	0	0	0	100
Cross Area Proficiency	0	0	0	0	0	0	0

Akashi College		Year	2021		Course Title	English V

Course Information

Course Code	0030		Course Category	General / Compulsory
Class Format	Lecture		Credits	Academic Credit: 2
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	First Semester		Classes per Week	2
Textbook and/or Teaching Materials	Science Arena (成美堂), Data Base4500(桐原書店), Next Stage(桐原書店)			
Instructor	MATSUDA Yasutaka			

Course Objectives

(1)英語の内容を読み取り、英文を書く練習を通して英文読解力や作文力をつけるとともに必要な語彙力をつける。
(2) 音声教材を用いるなどしてヒアリング力や英語運用能力の向上をはかる。
(3)現代社会に関する様々な題材を扱い、技術者として必要な国際性など、幅広い教養を身につける。

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目1	英語の内容を読み取り、英文を書く練習を通して英文読解力や作文力をつけるとともに必要な語彙力を十分につけることができる。	英語の内容を読み取り、英文を書く練習を通して英文読解力や作文力をつけるとともに必要な語彙力をつけることができる。	英語の内容を読み取り、英文を書く練習を通して英文読解力や作文力をつけるとともに必要な語彙力をつけることができない。
評価項目2	付属の音声教材を用いるなどしてヒアリング力や英語運用能力の向上を十分にはかることができる。	付属の音声教材を用いるなどしてヒアリング力や英語運用能力の向上をはかることができる。	付属の音声教材を用いるなどしてヒアリング力や英語運用能力の向上をはかることができない。
評価項目3	現代社会に関する様々な題材を扱い、技術者として必要な国際性など、幅広い教養を十分に身につけることができる。	現代社会に関する様々な題材を扱い、技術者として必要な国際性など、幅広い教養を身につけることができる。	現代社会に関する様々な題材を扱い、技術者として必要な国際性など、幅広い教養を身につけることができない。

Assigned Department Objectives

学習・教育到達度目標 (A) 学習・教育到達度目標 (B) 学習・教育到達度目標 (E)

Teaching Method

Outline	グローバル化時代の技術者として必要な英語力をつけるために、英語の語彙力や読解力を向上させる。また、読解に必要な構文や文法の知識を身につける。
Style	毎時間、語彙力の確認テストを実施する。英文を読んで、その内容の理解を確認する演習問題を解く。CDを用いてリスニング力をつける。既習事項を参考に英作文の練習をする。適宜、課題を課す。
Notice	本科目は、授業で保証する学習時間と、予習・復習及び課題レポート作成に必要となる標準的な自己学習時間の総計が、90時間に相当する学習内容である。前もって配布された課題を確実にやってから授業に出ること。日々の自宅学習によって英語力の向上に努めること。理由なき遅刻や欠席で受験できなかった小テストは0点扱いとする。合格の対象としない欠席条件(割合) 1/4以上の欠課

Characteristics of Class / Division in Learning

□ Active Learning	☑ Aided by ICT	☑ Applicable to Remote Class	□ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	オリエンテーション & Unit1	授業内容や課題について適切な理解を深め今後の計画を立てる。
		2nd	Unit 2	各Unitの英文について理解し、適切に運用することが出来る。
		3rd	Unit 5	各Unitの英文について理解し、適切に運用することが出来る。
		4th	Unit 6	各Unitの英文について理解し、適切に運用することが出来る。
		5th	Unit 9	各Unitの英文について理解し、適切に運用することが出来る。
		6th	Unit 10	各Unitの英文について理解し、適切に運用することが出来る。
		7th	Review	各Unitの英文について理解し、適切に運用することが出来る。
		8th	中間試験	
	2nd Quarter	9th	Unit 11	各Unitの英文について理解し、適切に運用することが出来る。
		10th	Unit 13	各Unitの英文について理解し、適切に運用することが出来る。
		11th	Unit 14	各Unitの英文について理解し、適切に運用することが出来る。
		12th	Unit 15	各Unitの英文について理解し、適切に運用することが出来る。
		13th	Unit 17	各Unitの英文について理解し、適切に運用することが出来る。
		14th	Unit 18	各Unitの英文について理解し、適切に運用することが出来る。
		15th	Review	学習内容のまとめ

		16th	期末試験		

Evaluation Method and Weight (%)

	試験	発表	相互評価	態度	ポートフォリオ	その他	Total
Subtotal	50	0	0	0	0	50	100
基礎的能力	50	0	0	0	0	50	100
専門的能力	0	0	0	0	0	0	0
分野横断的能力	0	0	0	0	0	0	0

Akashi College	Year	2021		Course Title	Introduction to Japanese Language and Communication

Course Information

Course Code	0031		Course Category	General / Elective
Class Format	Lecture		Credits	Academic Credit: 2
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	First Semester		Classes per Week	2
Textbook and/or Teaching Materials	Do not use text. Distribute prints as appropriate.			
Instructor	ZENTOH Masashi			

Course Objectives

(1) Can write up practical texts (letters and e-mails) using a format or phrase that is appropriate to the recipient or purposes.
(2) Can collect appropriate information from printed materials and the Internet, depending on the purposes of reports and theses.
(3) Can write up reports and theses based on organized information, and can devise logical structure and development so that their arguments are conveyed effectively.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Can write up inquiry and request letters and e-mails effectively.	Can write up documents and letters with appropriate items, structure, and layout.	Cannot write up letters and e-mails with appropriate layout.
Achievement 2	Can select appropriate material for PR documents, resumes, and theses.	Can select materials for PR documents, resumes, and theses.	Cannot select sufficient material for PR documents, resumes, and theses.
Achievement 3	Can make an appropriate and effective use of structure and development in proposals, reports, and theses.	Can make use of structure and development in proposals, reports, and theses.	Cannot make use of structure and development in proposals, reports, and theses.

Assigned Department Objectives

学習・教育到達度目標 (A) 学習・教育到達度目標 (E)

Teaching Method

Outline	This course will give an overview of the characteristics and points of caution regarding various texts (documents) for different purposes, such as entry sheets, resumes, reports, and theses. Each student is expected to prepare the material in advance, practice writing properly within the time limit, in order to overcome the problems identified, and acquire a rich and correct expression skills.
Style	There will be lectures on basic ways to write up resumes, PR documents, proposals, reports, and theses and their examples, and assignments to answer questions to test students ' learning and understanding. Assignments are to be completed and submitted either during or outside class, and evaluated.
Notice	This course's content will amount to 90 hours of study in total. These hours include the learning time guaranteed in classes and the standard self-study time required for pre-study / review, and completing assignment reports. Students who miss 1/3 or more of classes will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Orientation 1. Course outline 2 Themes, intentions, structure, and elaboration	Can lay out document appropriately using bullets, signs, headings, and numbers.
		2nd	Resumes and entry sheets 1. How to write the data section, writing of the self-promotion section, material collection, effective expression (symbols, organization, etc.) 2. Consideration of themes and case studies	Can effectively write a resume/entry sheet that aligns with their future career preferences.
		3rd	Motivation letters and research plan 1. Motivation letters 2 Research plan	Can effectively write a motivation letter and a research (career) plan in an appropriate format, according to their future career preferences.
		4th	Essays 1 1. Themes: regional contribution, internship, environment 2. Material collection and composition	Can use appropriate materials according to each theme, to write an essay in a logical and effective manner.
		5th	Essays 2 1 Themes: economy and technology 2. Materials collection and composition	Can use appropriate materials according to each theme, to write an essay in a logical and effective manner.
		6th	Reports 1 1. Separate notes 2. Diagram and layout	Can effectively use charts in the form of a separate note to write up reports and resumes with excellent layout.
		7th	Organizing issues by theme 1 1. Content issues 2. Representation issues	Can create a variety of documents that are excellent in theme setting, material selection, and expression skill.
		8th	Midterm exam	

	2nd Quarter	9th	Organizing issues by theme 2 1. Theme background 2. Progress of the problem	Can effectively set up themes and problems effectively and properly write an introduction to a thesis.
		10th	Reports 2 1. Proposals 2. Presentations	Can create a regime and slides for proposals. Can give a presentation effectively.
		11th	Research themes and problems setting 1. Setting up themes and problems 2. Self-analysis	Can set an appropriate theme, and structure and develop a text using effective materials.
		12th	Theses 1 1. Plans 2. Structure	Can write a compelling plan. Can create a structure table for the entire thesis.
		13th	Theses 2 1. Notation 2. Bibliography	Can write notes, citations, and bibliography appropriately.
		14th	Theses 3 1. Investigation, research and significance 2. Interim report, review, Q&A session	Can show the method of research clearly and give a prospect on the research results. Can create a clear schedule for the interim presentation and the graduation research presentation.
		15th	Issues and organization 1. Solving and organizing issues 2. Summary	Can review their own research plans and improve them appropriately.
		16th	Final exam	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	100	0	0	0	0	0	100
Basic Proficiency	100	0	0	0	0	0	100
Specialized Proficiency	0	0	0	0	0	0	0
Cross Area Proficiency	0	0	0	0	0	0	0

Akashi College		Year	2021		Course Title	Law

Course Information

Course Code	0032		Course Category	General / Elective
Class Format	Lecture		Credits	Academic Credit: 2
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	First Semester		Classes per Week	2
Textbook and/or Teaching Materials	使用しない。毎回配布するレジュメに沿って授業を進める。（参考となる文献リストは初回授業時に紹介する）			
Instructor	KUROKUI Yoshimi			

Course Objectives

法に関する基礎的な概念や法的思考を理解する。時代とともに変化する課題や問題に対処するために、
法がどのような役割を期待され、また果たしてきたのかについて客観的に理解する。
また、法が私達の日常生活に密接に関係していることを理解し、問題意識や意見を養う機会とし、
法的に考察する能力を身に付けることを目標とする。

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目1	法（憲法、刑法、民法、国際法）に関する基本的な知識を熟知している。	法（憲法、刑法、民法、国際法）に関する基本的な知識を持っている。	法（憲法、刑法、民法、国際法）に関する基本的な知識が不十分である。
評価項目2	課題や問題に対処するため、法がどのような役割を期待され、果たしてきたかについて客観的に説明できる。	課題や問題に対処するため、法がどのような役割を期待され、果たしてきたかについて理解できる。	課題や問題に対処するため、法がどのような役割を期待され、果たしてきたかについての理解が不十分である。
評価項目3	現代社会で生じている様々な事件や事象を、的確に法的に考察することができる。	現代社会で生じている様々な事件や事象を考える際に，ある程度法的な思考ができる。	現代社会で生じている様々な事件や事象を捉える際、法的な観点からの思考ができない。

Assigned Department Objectives

学習・教育到達度目標 (A) 学習・教育到達度目標 (B) 学習・教育到達度目標 (C)

Teaching Method

Outline	本科目では、法の基本概念及び法的思考について学習する。政治、経済、社会のなかで、法がどのような役割を持ち、また機能しているのかについて、日常生活の様々な事象と結びつけながら確認していく。
Style	配布資料や板書を用いた講義を中心とするが、インタラクティブな授業にするために受講者には積極的な発言や主体的な思考を求める。
Notice	本科目では法律学の基本概念を体系的に解説するが、受講者の理解度を見て各授業のテーマ、取り上げる順番を変更することがある。 合格の対象としない欠席条件(割合)　1/3以上の欠課

Characteristics of Class / Division in Learning

☑ Active Learning	☑ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	ガイダンス・法とは何か	法の概念や分類について理解する。
		2nd	法の歴史	法の歴史的な発展過程について理解する。
		3rd	憲法の基本原理	日本のあらゆる法の最上位にある憲法の根幹理念としての基本原理（国民主権、基本的人権の尊重、平和主義）について理解する。
		4th	平等権	平等権について、その基礎概念を理解するとともに、法でどのように保障されてるかを理解する。
		5th	自由権	自由権について、その基礎概念を理解するとともに、法でどのように保障されてるかを理解する。
		6th	社会権	社会権について、その基礎概念を理解するとともに、法でどのように保障されてるかを理解する。
		7th	国家の統治機構	日本の統治機構（国会、内閣、裁判所）とそれらの関係性について理解する。
		8th	レポート作成	レポート課題を課す。
	2nd Quarter	9th	刑法	刑法の機能や犯罪の成立要件について学習し、ある行為がいかにして刑法上の犯罪として法的に構成されるのかを理解する。
		10th	民法	財産法や家族法の基本原則について学習し、日常生活における私人間の約束は、民法上の契約を構成しうることを理解する。
		11th	経済・産業と法	消費者保護法や知的財産法等を学習し、経済活動・産業活動を行う様々な主体間の関係が、法でどのように保障されているか理解する。
		12th	労働と法	労働者の権利がどのように法で保障されているか理解する。
		13th	社会保障・社会福祉と法	国民の生活（医療、年金、生活保護等）を、法がどのように保障しているのか理解する。

		14th	情報化社会と法	法が、どのように情報を得るという個人の自由を保障し、誤情報や不適切な情報の濫用を規制しているのか理解をする。
		15th	国際社会と法	国家間関係を規律する国際法の種類や基礎的事項について理解する。
		16th	期末試験	期末試験（筆記）を行う。

Evaluation Method and Weight (%)

	期末試験	課題（小レポート）	相互評価	平常点（授業態度）	ポートフォリオ	その他	Total
Subtotal	60	20	0	20	0	0	100
基礎的能力	60	20	0	20	0	0	100
専門的能力	0	0	0	0	0	0	0
分野横断的能力	0	0	0	0	0	0	0

	期末試験	課題（小レポート）	相互評価	平常点（授業態度）	ポートフォリオ	その他	Total

Akashi College		Year	2021		Course Title	Philosophy

Course Information

Course Code	0033		Course Category	General / Elective
Class Format	Lecture		Credits	Academic Credit: 2
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	First Semester		Classes per Week	2
Textbook and/or Teaching Materials	Disutribute handouts each time			
Instructor	HATTORI Keisuke			

Course Objectives

・ Learn the thoughts of philosophers on basic issues of philosophy and ethics.
・ Learn the basic issues of engineering ethics and the specific situations.
・ Acquire thinking skills, such as "to state the reasons," "to define," and "to clarify the premises," and develop an ability to think philosophically about familiar issues in daily lives and society.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Fully understand the thoughts of major philosophers on basic issues of philosophy and ethics and become able to express their opinions about it.	Generally understand the thoughts of major philosophers on basic issues of philosophy and ethics.	Do not understand the thoughts of major philosophers on basic issues of philosophy and ethics.
Achievement 2	Have a basic knowledge of engineering ethics understand problems in specific situations, and identify them by themselves.	Have a basic knowledge of engineering ethics and understand the issue in specific situations.	Do not have enough basic knowledge of engineering ethics and do not understand the problem in a specific situations.
Achievement 3	Have a good command of thinking skills, such as "to state the reasons," "to define," and "to clarify the premises," and can think multilaterally and critically about issues in daily lives and society.	Know thinking skills, such as "to state the reasons," "to define," and "to clarify the premises," and can think from multiple perspectives about issues in daily lives and society.	Have not fully acquired thinking skills, such as "to state the reasons," "to define," and "to clarify the premises," and cannot think from multiple perspectives about issues in daily lives and society.

Assigned Department Objectives

学習・教育到達度目標 (A) 学習・教育到達度目標 (B) 学習・教育到達度目標 (C)

Teaching Method

Outline	The aim of this course is to acquire the ability to think and discuss multilaterally and critically about familiar issues in daily lives and society, while learning the thoughts of philosophers and ethicists, thinking skills. In addition, as a practical application, students will analyze ethical issues that engineers will face in modern society, referring to the actual cases and laws.
Style	The course is centered on lectures using handouts. If necessary, ask students questions related to the topics of each class and let them express their opinions. Students will be submit assignments and questionnaires each time to measure their understanding. For their questions and insufficient understanding, feedback will be provided the next week or after.
Notice	This course's content will amount to 90 hours of study in total. These hours include the learning time guaranteed in classes and the standard self-study time required for pre-study / review, and completing assignment reports. Students who miss 1/3 or more of classes will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☑ Active Learning	☑ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	What is philosophy and ethics? Overview of the curriculum plan	Learn the basic concepts of philosophy and ethics, and understand the significance of studying them.
		2nd	History of japanese philosophy 1 Studies as Science	Understand the thought of Fukuzawa Yukichi, who laid the foundation for modern Japanese academia, and reflect on studies as "science" in the modern era.
		3rd	History of japanese philosophy 2 The relationship between science and philosophy	Understand the thought of Nishi Amane, who first presented the concept of "science" in Japan, and think about the significance of philosophy in academia.
		4th	History of japanese philosophy 3 Science and education	Understand the ideology of the "Gakusei: edicational system" that formed the basis of education in modern Japan, and consider the role that "philosophy" played in this system.
		5th	History of japanese philosophy 4 The theory of evolution and morality	Understand the concept of the theory of evolution, which has had a major impact on the scientific and philosophical studies in Japan, and examine the speculations about morality that emerge from it.
		6th	History of japanese philosophy 5 Biological and social evolution	Understand the change in scientific studies in Japan since the introduction of the theory of evolution, and grasp the impact it brought.

		7th	History of japanese philosophy 6 Problems with the theory of evolution	Understand the problems with the idea of evolution and discuss its benefits and drawbacks.
		8th	Report writing	Examine philosophical and ethical issues from individual perspectives and present their opinions.
	2nd Quarter	9th	History of japanese philosophy 7 Two perspectives on science	Understand the new concept of "science" that appeared in the late Meiji period, and consider how it differs from the previous one.
		10th	History of japanese philosophy 8 New science and morality	Understand the thought about morality proposed in the viewpoint of "science" after the late Meiji era, and evaluate its characteristics.
		11th	History of japanese philosophy 9 The relationship between the two views on science and philosophy	Understand the link between the concept of "science" and philosophical studies in the late Meiji period, and reconsider the significance of philosophy.
		12th	History of japanese philosophy 10 Philosophical and scientifical thinking	Understand the thought of Kitaro Nishida, who established the basis of philosophical studies after the Taisho era, and grasp the difference between "philosophy" and "science" indicated therein.
		13th	History of japanese philosophy 11 Scientific technology and ethics	Understand the thought on the relationship between technology and morality presented in the study of philosophy and ethics in the Taisho era, and contemplate its significance for the present day.
		14th	Engineering ethics 1 What is engineering ethics?	Understand the issues of " engineering ethics" in modern society, and consider their importance in the context of specific cases.
		15th	Engineering ethicsg 2 Problems of living as an engineer	Understand the issues of living as an engineer in the present age, and consider how to deal with them.
		16th	Report writing	Examine the relationship between philosophical-ethical thoughts and modern society from each viewpoint and offer their opinions.

Evaluation Method and Weight (%)

	Examination	Exercise & Nor mal point	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	0	100	0	0	0	0	100
Basic Proficiency	0	100	0	0	0	0	100
Specialized Proficiency	0	0	0	0	0	0	0
Cross Area Proficiency	0	0	0	0	0	0	0

Akashi College	Year	2021		Course Title	Biophysical Chemistry

Course Information

Course Code	0034		Course Category	General / Elective
Class Format	Lecture		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	Second Semester		Classes per Week	2
Textbook and/or Teaching Materials				
Instructor	OGASAWARA Hiromichi			

Course Objectives

(1) Learn how to examine chemical reactions occurring in life based on knowledge of physics and chemistry.
(2) Learn how basic scientific knowledge of mathematics, physics, and chemistry is applied to understanding life, including the foundations of knowledge for considering in future that engineering technique affect the living body and environment.
(3) Learn the practical methods of physical and chemical experiments through the experiment of food processing.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Fully understand how to examine chemical reactions occurring in life based on physics and chemistry.	Understand how to examine chemical reactions occurring in life based on physics and chemistry.	Do not understand how to examine chemical reactions occurring in life based on physics and chemistry.
Achievement 2	Fully understand how basic knowledge is applied as life science.	Understand how basic knowledge is applied as life science.	Do not understand how basic knowledge is applied as life science.
Achievement 3	Fully understand the physical and chemical methods of experiments involving biomaterials.	Understand the physical and chemical methods of experiments involving biomaterials.	Do not understand the physical and chemical methods of experiments involving biomaterials.

Assigned Department Objectives

学習・教育到達度目標 (C) 学習・教育到達度目標 (D) 学習・教育到達度目標 (G)

Teaching Method

Outline	Physical chemistry is a field of chemistry in which the structure, function (physical properties), and reaction of matters are elucidated using physical methods. In this field, biophysical chemistry is the division that deals with the phenomena occurring in life as problems in the physical chemistry. 　In this course, we will study the chemical reactions that occur in life, with focus mainly on the energy flow and reaction rate. It will also involve the experiment of food processing.
Style	Regular classes will be taught in a lecture style, and there will also be exercises and quizzes. In addition, there will be two classes to conduct experiments.
Notice	Study by consciously thinking how knowledge of the basic scientific subjects (mathematics, physics, chemistry) that you have learned so far is helping to understand life and familiar phenomena related to it. 　In order to ensure the safety of the experiments, if more than 40 students wish to take the course, we will conduct a lottery in the first class to decide who can take the course based on the results. Therefore, students who wish to take the course should attend the first class and submit an application for attendance. Furthermore, experiments may be conducted by changing the date and time of the class depending on the number of people and time involved. Students who miss 1/3 or more of classes will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Guidance	
		2nd	Energetics of non-living and living materials	Learn about the changes of matter and energy of materials.
		3rd	Energetics of non-living and living materials	Learn about the changes of matter and energy of materials.
		4th	Decomposition of sugar (carbohydrate)	Learn about the decomposition of carbohydrates.
		5th	Decomposition of sugar (carbohydrate)	Learn about the decomposition of carbohydrates.
		6th	Photosynthesis	Learn about photosynthesis.
		7th	Photosynthesis	Learn about photosynthesis.
		8th	Midterm exam	
	4th Quarter	9th	Experiment	Learn about the methods of food processing.
		10th	Experiment	Learn about the methods of food processing.
		11th	Chemical kinetics	Learn about the basic matters of chemical kinetics that's necessary for future learning.
		12th	Enzymes	Learn about the basic matters of enzymes.
		13th	Michaelis-Menten enzyme kinetics (overview)	Learn about the basic matters of Michaelis-Menten kinetics.
		14th	Michaelis-Menten enzyme kinetics (details)	Learn about some examples of application of Michaelis-Menten kinetics.

| | | 15th | Michaelis-Menten enzyme kinetics (details) | Learn about some examples of application of Michaelis-Menten kinetics. |
| | | 16th | Final exam | |

Evaluation Method and Weight (%)

	Examination	Exercises / Short test	Report	Total
Subtotal	50	40	10	100
Basic Proficiency	50	40	10	100
Specialized Proficiency	0	0	0	0
Cross Area Proficiency	0	0	0	0

Akashi College		Year	2021		Course Title	Scientific Technology and the Environment

Course Information

Course Code	0035		Course Category	General / Elective
Class Format	Lecture		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	Second Semester		Classes per Week	2
Textbook and/or Teaching Materials	『日本ファイバー興亡史―荒井溪吉と繊維で読み解く技術・経済の歴史―』井上尚之著、大阪公立大学共同出版会			
Instructor	INOUE Naoyuki			

Course Objectives

（1）明治から太平洋戦争後の科学技術の発達の歴史を知る。
（2）科学技術の発達によっていかに環境破壊が起こったかを知る。
（3）科学技術と環境破壊の関係を知り、科学技術者はいかに活動すべきかを考える。
（4）授業中にマイクを回し、教科書を読み、意見を述べる。

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目1	明治から太平洋戦争後の科学技術の発達の歴史を十分に理解している。	明治から太平洋戦争後の科学技術の発達の歴史を理解している。	明治から太平洋戦争後の科学技術の発達の歴史を理解してない。
評価項目2	科学技術の発達によっていかに環境破壊が起こったかを十分に理解している。	科学技術の発達によっていかに環境破壊が起こったかを理解している。	科学技術の発達によっていかに環境破壊が起こったかを理解していない。
評価項目3	科学技術と環境破壊の関係に基づいて科学技術者はいかに活動すべきかを的確に考えることができる。	科学技術と環境破壊の関係に基づいて科学技術者はいかに活動すべきかを考えることができる。	科学技術と環境破壊の関係に基づいて科学技術者はいかに活動すべきかを考えることができない。
評価項目4	授業で議論している教科書の内容に対して的確な意見を述べることができる。	授業で議論している教科書の内容に対して意見を述べることができる。	授業で議論している教科書の内容に対して意見を述べることができない。

Assigned Department Objectives

学習・教育到達度目標 (A) 学習・教育到達度目標 (C) 学習・教育到達度目標 (D)

Teaching Method

Outline	明治から太平洋戦争後の25年間、日本の主要輸出産業は繊維産業であった。しかし現在、日本の汎用化学繊維生産量は世界の1％にも満たない。日本の繊維産業は総合化学会社に変身し、高付加価値の炭素繊維やアスベスト代替繊維、さらには油水分離フィルター・水質浄化装置・バグフィルターなど環境保全になくてはならない化学物資を生産している。日本の繊維産業の興亡を通して、技術の進歩と経済の歴史を学習する。更に環境問題に産業界がどのように取り組んでいったかを俯瞰すると共に技術者倫理にも言及する。
Style	学生による発表を含む講義形式で授業を行う。
Notice	授業中の発表・態度を重視する。講師はISO14001の審査員であり、この科目ではその経験を活かして環境問題との関係も含めて技術の進歩と経済の歴史について講義する。※連絡員：小笠原合格の対象としない欠席条件(割合) 1/3以上の欠課

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☑ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	明治の産業―生糸	繊維の分類、富岡製糸工場の実態、生糸製造過程、第1次大戦後の製糸業の発展等を学ぶ。
		2nd	日本の産業革命の中心産業―綿紡績（1）	松方デフレ政策と大阪紡績会社の成功、日清・日露戦争後の繊維産業の躍進、第1次世界大戦景気と金融恐慌、昭和恐慌、経済の回復と重化学工業の発達等を学ぶ。
		3rd	見学旅行のため、本科目の授業なし。	見学旅行のため、本科目の授業なし。
		4th	日本の産業革命の中心産業―綿紡績（2）	綿紡績過程、女工哀史、豊田佐吉は何をしたのか、日本の特許制度の確立等を学ぶ。
		5th	再生繊維レーヨンの登場（1）	銅アンモニアレーヨン（キュプラ）、ビスコースレーヨン、秦逸三とは何者か等を学ぶ。
		6th	再生繊維レーヨンの登場（2）	レーヨン黄金期、スフ登場等を学ぶ。
		7th	それはニューヨークタイムズ「合成シルク」の記事から始まった	ナイロンの報道、ナイロン発表、三井物産と東洋レーヨンの関係、カロザースの生涯、デュポン社の歴史、ナイロン発明の実態等を学ぶ。
		8th	中間試験	
	4th Quarter	9th	ナイロンショック―荒井溪吉始動（1）	ナイロンショック、財団法人日本合成繊維研究協会設立、財団法人日本合成繊維研究協会の活動、終戦後の日本経済牽引役―ビニロンとナイロン等を学ぶ。
		10th	ナイロンショック―荒井溪吉始動（2）	財団法人理化学研究所と財団法人日本合成繊維研究所との相違、ナイロンとビニロンの工業化、アセテート、塩化ビニリデンと塩化ビニルの生産、ポリエステルとアクリル等を学ぶ。

		11th	太平洋戦争後の荒井溪吉の活躍（１）	財団法人日本放射線高分子化学研究協会設立、高分子原料開発技術研究組合設立、鉱工業技術研究組合法成立等を学ぶ。
		12th	太平洋戦争後の荒井溪吉の活躍（２）	法人格のない高分子原料開発技術研究組合から法人格のある高分子原料技術研究組合へ、時代は石炭から石油へ、石油からの合成繊維の工程、技術研究組合の隆盛等を学ぶ。
		13th	太平洋戦争後の環境問題とその解決	4大公害裁判など日本の産業発展に伴う環境問題発生、公害対策基本法制定と環境庁設置、環境基本法、循環型社会形成推進基本法等について学ぶ。
		14th	化学繊維と環境	化学繊維と環境保全、化学繊維製品のリサイクル、ペットボトルのポリエステル繊維へのリサイクル等を学ぶ。
		15th	環境破壊と技術者倫理	人類を幸福にするはずの技術の進歩が逆に人類に不幸を与えた典型が環境破壊である。講師はISO14001の審査員でもあり、これらをもとに技術者倫理はいかにあるべきかを考える。
		16th	期末試験	

Evaluation Method and Weight (%)

	発表・態度・授業への積極的参加	レポート	定期試験	Total
Subtotal	40	10	50	100
基礎的能力	40	10	50	100
専門的能力	0	0	0	0
分野横断的能力	0	0	0	0

Akashi College		Year	2021		Course Title	Sports Science Ⅰ

Course Information

Course Code	0036		Course Category	General / Elective
Class Format	Skill		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	First Semester		Classes per Week	2
Textbook and/or Teaching Materials				
Instructor	MAEDA Tadanori,KOBAYASHI Yuki			

Course Objectives

・授業に参加して自身の健康増進、体力向上に努める。また、ある程度の自己管理力がある。
・安全にスポーツを行うための行動がとれる。また、チームで協調、共同することの意義を認識し、そのために必要な行動がとれる。

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安(可)	未到達レベルの目安
授業の取り組み	主体的に授業に参加して自身の健康増進、体力向上に努める。自己管理力が高い。	授業に参加して自身の健康増進、体力向上に努める。ある程度自己管理力がある	授業への参加や自身の健康増進、体力向上に消極的。自己管理力が高くない。	授業に参加しない。自身の健康増進、体力向上に努めない。自己管理力が低い。
実技	各種目の練習、ゲームに積極的に参加し、競技力が非常に高い。また、ゲーム等に大きな影響力を持つ。	各種目の練習、ゲームに積極的に参加することができる。また、その技術を身に付けている。	各種目の練習、ゲームに参加することができる。	各種目の練習、ゲームに参加しない。
リーダーシップ	リーダーの役割をよく理解し、チームワーク力を高めることができる。	リーダーの役割を理解して担う、もしくは引き受けることができる。	リーダーの役割を理解しているが、その役割を担うことはない。	リーダーの役割を理解していない。またその役割を担うこともない。

Assigned Department Objectives

学習・教育到達度目標 (A) 学習・教育到達度目標 (B)

Teaching Method

Outline	スポーツを日常的に取り入れる習慣を身に付けてもらうべく、その楽しさや奥深さをさらに知ってもらいたい。この授業は、主体的、積極的に参加する姿勢を求めている。グループを作り、リーダーが中心となって授業内容の立案、検討、実施をすべて行ってもらう。選択可能な種目は以下の通りである。野球、ソフトボール、サッカー、フットサル、テニス、バスケットボール、バレーボール、バドミントン、卓球、トレーニング、フライングディスク
Style	下級生で覚えたルールやゲームの進め方、習得した基本技術を基にゲームを通してさらにスキルアップしてもらいたい。また、リーダーを中心にチームで協調、共同しながらチームワーク力を高める楽しさも体験してほしい。受講学生が主体的に、安全かつ雰囲気のよい授業となるような取り組みをし、担当教員がそのサポートをするような授業作りをしたいと考えている。
Notice	・トレーニングウエア、運動靴を着用すること。着用していない場合は減点の対象となる。 ・アクセサリー類、時計、その他不必要な物の着用や持ち込みを禁止する。これらも減点の対象となる。 ・遅刻は開始20分までとする。20分以後の参加は認めるが欠席扱いとする。 ・無断早退(抜け出し)が発覚した場合はその授業を欠席とし、それまでの授業も欠席同等の減点を課す。 合格の対象としない欠席条件(割合) 1/4以上の欠課

Characteristics of Class / Division in Learning

☑ Active Learning	□ Aided by ICT	☑ Applicable to Remote Class	□ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	ガイダンス、野球、ソフトボール、サッカー、フットサル、テニス、バスケットボール、バレーボール、バドミントン、卓球、トレーニング、フライングディスク	この授業の目的、目標を理解する。希望種目に分かれチームを作り、リーダーを選出する。
		2nd	野球、ソフトボール、サッカー、フットサル、テニス、バスケットボール、バレーボール、バドミントン、卓球、トレーニング、フライングディスク	リーダーを中心に準備体操、練習、ゲームを行い、授業の振り返りを行うことができる。
		3rd	野球、ソフトボール、サッカー、フットサル、テニス、バスケットボール、バレーボール、バドミントン、卓球、トレーニング、フライングディスク	リーダーを中心に準備体操、練習、ゲームを行い、授業の振り返りを行うことができる。
		4th	野球、ソフトボール、サッカー、フットサル、テニス、バスケットボール、バレーボール、バドミントン、卓球、トレーニング、フライングディスク	リーダーを中心に準備体操、練習、ゲームを行い、授業の振り返りを行うことができる。
		5th	野球、ソフトボール、サッカー、フットサル、テニス、バスケットボール、バレーボール、バドミントン、卓球、トレーニング、フライングディスク	リーダーを中心に準備体操、練習、ゲームを行い、授業の振り返りを行うことができる。
		6th	野球、ソフトボール、サッカー、フットサル、テニス、バスケットボール、バレーボール、バドミントン、卓球、トレーニング、フライングディスク	リーダーを中心に準備体操、練習、ゲームを行い、授業の振り返りを行うことができる。
		7th	野球、ソフトボール、サッカー、フットサル、テニス、バスケットボール、バレーボール、バドミントン、卓球、トレーニング、フライングディスク	リーダーを中心に準備体操、練習、ゲームを行い、授業の振り返りを行うことができる。
		8th	中間試験実施せず	
	2nd Quarter	9th	野球、ソフトボール、サッカー、フットサル、テニス、バスケットボール、バレーボール、バドミントン、卓球、トレーニング、フライングディスク	希望種目に分かれチームを作り、リーダーを選出する。

		10th	野球、ソフトボール、サッカー、フットサル、テニス、バスケットボール、バレーボール、バドミントン、卓球 、トレーニング、フライングディスク	リーダーを中心に準備体操、練習、ゲームを行い、授業の振り返りを行うことができる。
		11th	野球、ソフトボール、サッカー、フットサル、テニス、バスケットボール、バレーボール、バドミントン、卓球 、トレーニング、フライングディスク	リーダーを中心に準備体操、練習、ゲームを行い、授業の振り返りを行うことができる。
		12th	野球、ソフトボール、サッカー、フットサル、テニス、バスケットボール、バレーボール、バドミントン、卓球 、トレーニング、フライングディスク	リーダーを中心に準備体操、練習、ゲームを行い、授業の振り返りを行うことができる。
		13th	野球、ソフトボール、サッカー、フットサル、テニス、バスケットボール、バレーボール、バドミントン、卓球 、トレーニング、フライングディスク	リーダーを中心に準備体操、練習、ゲームを行い、授業の振り返りを行うことができる。
		14th	野球、ソフトボール、サッカー、フットサル、テニス、バスケットボール、バレーボール、バドミントン、卓球 、トレーニング、フライングディスク	リーダーを中心に準備体操、練習、ゲームを行い、授業の振り返りを行うことができる。
		15th	野球、ソフトボール、サッカー、フットサル、テニス、バスケットボール、バレーボール、バドミントン、卓球 、トレーニング、フライングディスク	リーダーを中心に準備体操、練習、ゲームを行い、授業の振り返りを行うことができる。
		16th	期末試験実施せず	

Evaluation Method and Weight (%)

	授業の取り組み	実技	リーダーシップ	Total
Subtotal	75	10	15	100
基礎的能力	75	0	0	75
分野横断的能力	0	10	15	25

Akashi College	Year	2021		Course Title	Sports Science Ⅱ

Course Information

Course Code	0037		Course Category	General / Elective
Class Format	Skill		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	Second Semester		Classes per Week	2
Textbook and/or Teaching Materials				
Instructor	GOTOH Takayuki,MAEDA Tadanori			

Course Objectives

・ Participate in classes to improve students' own health and physical strength. Also, have some level of self-discipline.
・ Can take action to conduct sports safely. Also, recognizes the significance of collaborating and cooperating with the team and can take the necessary action to do so.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Actively participate in classes to improve their health and physical strength. Have a high level of self-discipline.	Participate in classes to improve their health and physical strength. Have some level of self-discipline.	Reluctant to participate in classes, or improve their own health and physical strength. Do not have a high level of self-discipline.
Achievement 2	Do not participate in classes. Do not strive to improve their health and physical strength. Have a poor level of self-discipline.	Actively participate in various sport practices and games, and are very competitive. Also have a great influence on games, etc.	Can actively participate in various sport practices and games. And also have the skills for them.
Achievement 3	Can participate in various sport practices and games.	Do not participate in various sport practices and games.	Understand the role of a leader well, and can help increase teamwork.
	Understand and can play or take on the role of a leader.	Understand the role of a leader, but cannot play that role.	Do not understand the role of a leader. Also, never play that role.

Assigned Department Objectives

学習・教育到達度目標 (A) 学習・教育到達目標 (B)

Teaching Method

Outline	The goal of this course is for students to learn more about the fun and depth of sports so that they can build the habit of playing sports on a daily basis. This class requires an active and proactive attitude to participate. Students will split into groups and leaders will take the lead to plan, review, and implement the course content. Students can choose from: Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc
Style	Students are encouraged to improve their skills through games based on the rules, how to play games, and the basic skills they learned in previous years. They are also encouraged to experience the fun of enhancing teamwork while collaborating and cooperating with your team with your leader in the center. Students should take the initiative in creating a safe and welcoming class, and the instructors support their effort.
Notice	・ Wear training wear and athletic shoes. If students fail to wear them, points will be deducted from their grade. ・ Do not wear or bring accessories, watches, or any other unnecessary items. These are also eligible for grade deduction. ・ Tardiness will be excused for the first 20 minutes. Students can participate in the class after 20 minutes, but their attendance will be marked as absent. ・ If it is discovered that a student left class early without being excused (ditching class), their attendance for that class will be marked as absent, and their grade for previous classes will suffer a deduction equal to an absence. Students who miss 1/4 or more of classes will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Guidance Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Understand the purposes and objectives of this course. Split into teams in each sport and select a leader.
		2nd	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		3rd	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		4th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		5th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.

		6th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		7th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		8th	No midterm exam	
	4th Quarter	9th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Split into teams in each sport and select a leader.
		10th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		11th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		12th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		13th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		14th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		15th	Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc	Can do warm-up and practice, play games, and reflect on the class, led by a leader.
		16th	No final exam	

Evaluation Method and Weight (%)

	Approach to a class	Practical skill	Leadership	Total
Subtotal	75	10	15	100
Basic Proficiency	75	0	0	75
Specialized Proficiency	0	0	0	0
Cross Area Proficiency	0	10	15	25

Akashi College		Year	2021		Course Title	T O E I C I

Course Information

Course Code	0038		Course Category	General / Elective
Class Format	その他		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	Year-round		Classes per Week	1
Textbook and/or Teaching Materials	None			
Instructor	MATSUDA Yasutaka,KITAGAWA Chiho			

Course Objectives

1) The student will foster cross-cultural understanding and cross-cultural adaptability by tackling exam questions that require knowledge of English and the English-speaking cultural background. The student should acquire 430 or more points in the test, what shows that the students English knowledge fulfills the needs of everyday life and allows business communication within a limited range.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
1) cross-cultural understanding and adaptability	The student has fostered cross-cultural understanding and cross-cultural adaptability by tackling exam questions that require knowledge of English and the English-speaking cultural background.	The student has fostered some cross-cultural understanding and cross-cultural adaptability by tackling exam questions that require knowledge of English and the English-speaking cultural background.	The student has not fostered cross-cultural understanding and cross-cultural adaptability by tackling exam questions that require knowledge of English and the English-speaking cultural background.
2) English knowledge	The students have acquired English knowledge that fulfills the needs of everyday life and allows business communication within a limited range.	The students have acquired some English knowledge that fulfills the needs of everyday life and allows business communication within a limited range.	The students have not acquired English knowledge that fulfills the needs of everyday life and allows business communication within a limited range.

Assigned Department Objectives

学習・教育到達度目標 (A) 学習・教育到達度目標 (B) 学習・教育到達度目標 (E)

Teaching Method

Outline	The ability to establish a problem and find the appropriate solution to this problem is a skill necessary at KOSEN (higher education institution). A skill required to live through the 21st century. The students that entered KOSEN need to acquire these skills at an early stage. In this course, the students will learn methods of self-learning and autonomously learning, and not "study" as they have learned at junior high school. Also, while cooperating with colleagues, the students will learn the process of problem discovery and resolution.
Style	The credits are obtained according to tests results, no classes
Notice	To apply for the credits is necessary the test scores, and the student should apply for the credits during the period stipulated by the students' affairs office. Applications without the test scores or after the application period will not be accepted. The indicator of English communication capability will be measured utilizing TOEIC (Test of English for International Communication), a test developed by the US Test and Development Public Institution (Educational Testing Service), which has the largest scale and know-how in the world. Through this test, the student will aim to improve his or her English language skills, and motivation to learn English. The test score is also useful for the students' careers.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st		
		2nd		
		3rd		
		4th		
		5th		
		6th		
		7th		
		8th	No mid-term Exam	
	2nd Quarter	9th		
		10th		
		11th		
		12th		
		13th		
		14th		
		15th		
		16th	No end-term Exam	
2nd Semester	3rd Quarter	1st		
		2nd		
		3rd		

		4th		
		5th		
		6th		
		7th		
		8th	No mid-term Exam	
	4th Quarter	9th		
		10th		
		11th		
		12th		
		13th		
		14th		
		15th		
		16th	No end-term Exam	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	100	0	0	0	0	0	100
Basic Proficiency	100	0	0	0	0	0	100
Specialized Proficiency	0	0	0	0	0	0	0
Cross Area Proficiency	0	0	0	0	0	0	0

Akashi College		Year	2021		Course Title	TOEIC II

Course Information

Course Code	0039		Course Category	General / Elective
Class Format	その他		Credits	School Credit: 2
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	Year-round		Classes per Week	2
Textbook and/or Teaching Materials	None			
Instructor	MATSUDA Yasutaka,KITAGAWA Chiho			

Course Objectives

1) The student will foster cross-cultural understanding and cross-cultural adaptability by tackling exam questions that require knowledge of English and the English-speaking cultural background. The student should acquire 500 or more points in the test, what shows that the students English knowledge fulfills the needs of everyday life and allows business communication within a limited range.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
1) cross-cultural understanding and adaptability	The student has fostered cross-cultural understanding and cross-cultural adaptability by tackling exam questions that require knowledge of English and the English-speaking cultural background.	The student has fostered some cross-cultural understanding and cross-cultural adaptability by tackling exam questions that require knowledge of English and the English-speaking cultural background.	The student has not fostered cross-cultural understanding and cross-cultural adaptability by tackling exam questions that require knowledge of English and the English-speaking cultural background.
2) English knowledge	The students have acquired English knowledge that fulfills the needs of everyday life and allows business communication within a limited range.	The students have acquired some English knowledge that fulfills the needs of everyday life and allows business communication within a limited range.	The students have not acquired English knowledge that fulfills the needs of everyday life and allows business communication within a limited range.

Assigned Department Objectives

学習・教育到達度目標 (A) 学習・教育到達度目標 (B) 学習・教育到達度目標 (E)

Teaching Method

Outline	The ability to establish a problem and find the appropriate solution to this problem is a skill necessary at KOSEN (higher education institution). A skill required to live through the 21st century. The students that entered KOSEN need to acquire these skills at an early stage. In this course, the students will learn methods of self-learning and autonomously learning, and not "study" as they have learned at junior high school. Also, while cooperating with colleagues, the students will learn the process of problem discovery and resolution.
Style	The credits are obtained according to tests results, no classes
Notice	To apply for the credits is necessary the test scores, and the student should apply for the credits during the period stipulated by the students' affairs office. Applications without the test scores or after the application period will not be accepted. The indicator of English communication capability will be measured utilizing TOEIC (Test of English for International Communication), a test developed by the US Test and Development Public Institution (Educational Testing Service), which has the largest scale and know-how in the world. Through this test, the student will aim to improve his or her English language skills, and motivation to learn English. The test score is also useful for the students' careers.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st		
		2nd		
		3rd		
		4th		
		5th		
		6th		
		7th		
		8th	No mid-term Exam	
	2nd Quarter	9th		
		10th		
		11th		
		12th		
		13th		
		14th		
		15th		
		16th	No end-term Exam	
2nd Semester	3rd Quarter	1st		
		2nd		
		3rd		

		4th		
		5th		
		6th		
		7th		
		8th	No mid-term Exam	
	4th Quarter	9th		
		10th		
		11th		
		12th		
		13th		
		14th		
		15th		
		16th	No end-term Exam	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	100	0	0	0	0	0	100
Basic Proficiency	100	0	0	0	0	0	100
Specialized Proficiency	0	0	0	0	0	0	0
Cross Area Proficiency	0	0	0	0	0	0	0

Akashi College		Year	2021		Course Title	TOEICⅢ

Course Information

Course Code	0040		Course Category	General / Elective
Class Format	その他		Credits	School Credit: 3
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	Year-round		Classes per Week	3
Textbook and/or Teaching Materials	None			
Instructor	MATSUDA Yasutaka,KITAGAWA Chiho			

Course Objectives

1) The student will foster cross-cultural understanding and cross-cultural adaptability by tackling exam questions that require knowledge of English and the English-speaking cultural background. The student should acquire 650 or more points in the test, what shows that the students English knowledge fulfills the needs of everyday life and allows business communication within a limited range.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
1) cross-cultural understanding and adaptability	The student has fostered cross-cultural understanding and cross-cultural adaptability by tackling exam questions that require knowledge of English and the English-speaking cultural background.	The student has fostered some cross-cultural understanding and cross-cultural adaptability by tackling exam questions that require knowledge of English and the English-speaking cultural background.	The student has not fostered cross-cultural understanding and cross-cultural adaptability by tackling exam questions that require knowledge of English and the English-speaking cultural background.
2) English knowledge	The students have acquired English knowledge that fulfills the needs of everyday life and allows business communication within a limited range.	The students have acquired some English knowledge that fulfills the needs of everyday life and allows business communication within a limited range.	The students have not acquired English knowledge that fulfills the needs of everyday life and allows business communication within a limited range.

Assigned Department Objectives

学習・教育到達度目標 (A) 学習・教育到達度目標 (B) 学習・教育到達度目標 (E)

Teaching Method

Outline	The ability to establish a problem and find the appropriate solution to this problem is a skill necessary at KOSEN (higher education institution). A skill required to live through the 21st century. The students that entered KOSEN need to acquire these skills at an early stage. In this course, the students will learn methods of self-learning and autonomously learning, and not "study" as they have learned at junior high school. Also, while cooperating with colleagues, the students will learn the process of problem discovery and resolution.
Style	The credits are obtained according to tests results, no classes
Notice	To apply for the credits is necessary the test scores, and the student should apply for the credits during the period stipulated by the students' affairs office. Applications without the test scores or after the application period will not be accepted. The indicator of English communication capability will be measured utilizing TOEIC (Test of English for International Communication), a test developed by the US Test and Development Public Institution (Educational Testing Service), which has the largest scale and know-how in the world. Through this test, the student will aim to improve his or her English language skills, and motivation to learn English. The test score is also useful for the students' careers.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st		
		2nd		
		3rd		
		4th		
		5th		
		6th		
		7th		
		8th	No mid-term Exam	
	2nd Quarter	9th		
		10th		
		11th		
		12th		
		13th		
		14th		
		15th		
		16th	No end-term Exam	
2nd Semester	3rd Quarter	1st		
		2nd		
		3rd		

		4th		
		5th		
		6th		
		7th		
		8th	No mid-term Exam	
	4th Quarter	9th		
		10th		
		11th		
		12th		
		13th		
		14th		
		15th		
		16th	No end-term Exam	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	100	0	0	0	0	0	100
Basic Proficiency	100	0	0	0	0	0	100
Specialized Proficiency	0	0	0	0	0	0	0
Cross Area Proficiency	0	0	0	0	0	0	0

Akashi College		Year	2021		Course Title	Overseas Training Ⅲ

Course Information

Course Code	0041			Course Category	General / Elective	
Class Format	Practical training			Credits	School Credit: 1	
Department	Electrical and Computer Engineering Electrical Engineering Course			Student Grade	5th	
Term	Year-round			Classes per Week	1	
Textbook and/or Teaching Materials	なし					
Instructor	All faculty of the department					

Course Objectives

(1)海外における研修への参加を通じて、教養をより高めるための取り組みができる。
(2)異文化の中での研修に参加することで、広い視野を持つことができる。
(3)現地で関わる人々と英語などを用いてコミュニケーションができる。

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目1	海外における研修への参加を通じて、教養をより高めるための取り組みがよくできる。	海外における研修への参加を通じて、教養をより高めるための取り組みができる。	海外における研修への参加を通じて、教養をより高めるための取り組みができない。
評価項目2	異文化の中での研修に参加することで、広い視野を持つことがよくできる。	異文化の中での研修に参加することで、広い視野を持つことができる。	異文化の中での研修に参加することで、広い視野を持つことができない。
評価項目3	現地で関わる人々と英語などを用いてコミュニケーションがよくできる。	現地で関わる人々と英語などを用いてコミュニケーションができる。	現地で関わる人々と英語などを用いてコミュニケーションができない。

Assigned Department Objectives

学習・教育到達度目標 (A) 学習・教育到達度目標 (B) 学習・教育到達度目標 (E)

Teaching Method

Outline	海外における各種の研修体験を通じて、多面的に物事を考える能力やコミュニケーション能力を身に付けることが本科目のねらいである。研修期間は、夏季休業期間などとしてもよい。研修日数は、5日間以上とする。本科目は、海外での研修と、事前指導(マナー教育、研修先の下調べ)、事後の報告会、関係機関に配布する報告書の作成などの自己学習時間の合計が45時間以上に相当する学習内容である。
Style	事前オリエンテーション, 現地実習, 報告会
Notice	学級担任又は指導教員と緊密に連絡を取り合うこと。研修期間中は、積極的に現地の人たちと関わり、コミュニケーションをとるように努めるとともに、服装・言葉遣い等、研修生として相応しい態度で取り組むこと。 合格の対象としない欠席条件(割合) 条件なし

Characteristics of Class / Division in Learning

☑ Active Learning	☑ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st		
		2nd		
		3rd		
		4th		
		5th		
		6th		
		7th		
		8th		
	2nd Quarter	9th		
		10th		
		11th		
		12th		
		13th		
		14th		
		15th		
		16th	期末試験実施せず	
2nd Semester	3rd Quarter	1st		
		2nd		
		3rd		
		4th		
		5th		
		6th		
		7th		
		8th		

	4th Quarter	9th		
		10th		
		11th		
		12th		
		13th		
		14th		
		15th		
		16th	期末試験実施せず	

Evaluation Method and Weight (%)

	報告書	発表	Total
Subtotal	50	50	100
分野横断的能力	50	50	100

Akashi College		Year	2021		Course Title	Intellectual Property Rights

Course Information

Course Code	0042		Course Category	Specialized / Compulsory
Class Format	Lecture		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	First Semester		Classes per Week	2
Textbook and/or Teaching Materials				
Instructor	MORISADA Yuji			

Course Objectives

(1) Understand and can explain to others the systems of intellectual property rights in Japan and other countries (international and foreign).
(2) Acquire the knowledge to demonstrate appropriate intellectual property management capabilities within an organization as a research and development officer in a university or company, and can take the lead within an organization.
(3) Understand the flow of application procedures (in Japan and other countries), and understand which stage of the procedure they are in when communicating with a patent attorney or the Japan Patent Office (relevant organizations).
(4) Understand the importance of investigation, and can decide whether to conduct all of the investigation by themselves or to ask an expert to do it.
(5) Can acquire the computer literacy for doing the investigation they need, and actually implement it.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Understand and can explain to others the systems of intellectual property rights in Japan and other countries.	Understand and can explain to others the systems of intellectual property rights in Japan.	Cannot explain to others the system of intellectual property rights in Japan and other countries.
Achievement 2	Acquire the knowledge to demonstrate appropriate intellectual property management capabilities within an organization, and can take the lead within an organization.	Can explain the knowledge to demonstrate appropriate intellectual property management capabilities within an organization.	Cannot explain the knowledge to demonstrate appropriate intellectual property management capabilities within an organization.
Achievement 3	Understand the flow of application procedures and what stage of the process they are in when communicating with a patent attorney or the Japan Patent Office.	Understand the flow of application procedures.	Do not understand the flow of application procedures.
Achievement 4	Understand the importance of investigation, and can decide whether to conduct all of the investigation by themselves or to ask an expert to do it.	Can understand the importance of investigation and can determine the need for investigation.	Do not understand the importance of investigation.
Achievement 5	Can use the computer literacy necessary to conduct investigation themselves, and actually investigate.	Can explain the computer literacy necessary to conduct investigation themselves.	Cannot acquire the computer literacy necessary to conduct investigation themselves.

Assigned Department Objectives

学習・教育到達度目標 (A) 学習・教育到達度目標 (D)

Teaching Method

Outline	1) Basic theory of intellectual property rights (patent rights, utility model rights, design rights, trademark rights, copyright, etc.) 2) Methodologies for intellectual property management for researchers and developers (focusing on patent rights) 3) Flow of application procedures, etc. (explain the flows from application to registration, and after registration) 4) Flow of international application procedures, etc. (explain respective organizations and the flow after application, focusing on the PCT international patent application system) 5) Matters related to investigation on intellectual property rights: Lectures and exercises (explain the purpose of investigating patents, utility models, designs, and trademarks, and research tools; also do search exercises using the online J-PlatPat platform). This course will be taught by instructors who have experience in the procedures and consultation services relating to intellectual property rights in general.
Style	It involves lectures on patents, designs, copyrights, etc. The class will be carried out mainly with lectures, and there will be PC-based research exercises, etc. as appropriate.
Notice	Students are expected to take this course with a sense of reality, imagining that there is a creation (invention, etc.) that they or their friend/acquaintance researched and developed, how they can protect it and pursue rights for it. Students should be interested in news related to intellectual property rights on a daily basis, and develop a habit of thinking. Students who miss 1/3 or more of classes will not be eligible for a passing grade. The liaison for this course is the above-mentioned person.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☑ Instructor Professionally Experienced

Course Plan

			Theme		Goals

1st Semester	1st Quarter	1st	Summary of intellectual property rights	Understand an overview of intellectual property rights.
		2nd	Patents I	Understand the outline of the patent system, its purpose, and the patent (registration) requirements, etc.
		3rd	Patents II	Understand how to judge novelty and inventiveness.
		4th	Patents III	Understand the process of creating a broad and strong patent invention from ideas.
		5th	Patents IV	Understand the flow of procedures and employee inventions.
		6th	Patents V / International patent application system and patent systems in other countries	Understand the need, etc. for applying for patents in other countries.
		7th	Patents VI	Understand and implement methods for investigating patents and utility models.
		8th	Midterm exam	
	2nd Quarter	9th	Explanation and commentary on the midterm exam / Design rights I	Understand patents and utility models. Understand the outline of the design registration system.
		10th	Designs II	Understand the purpose of the design registration system, registration requirements, special design registration, the effectiveness of design rights, etc.
		11th	Trademarks	Understand the trademark precautions directly related to the case of creation of soy sauce with broth.
		12th	Copyrights I	Understand the outline of the copyright law (works, copyrights, moral rights, related rights, derivative works, copyright restrictions, etc.).
		13th	Copyrights II	Understand the infringement of rights, and copyright Q&A.
		14th	Unfair Competition Prevention Act, geographical Indications, etc.	Understand Unfair Competition Prevention Act, and geographical indications.
		15th	Investigation of design or trademark Summary of intellectual property rights	Understand and implement investigation of design or trademark. Understand the differences between intellectual property rights (patent, utility model, design, trademark, copyright)
		16th	Final exam	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	100	0	0	0	0	0	100
Basic Proficiency	0	0	0	0	0	0	0
Specialized Proficiency	100	0	0	0	0	0	100
Cross Area Proficiency	0	0	0	0	0	0	0

Akashi College		Year	2021		Course Title	Graduation Thesis

Course Information

Course Code	0043		Course Category	Specialized / Compulsory
Class Format	Seminar		Credits	School Credit: 9
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	Year-round		Classes per Week	前期:6 後期:12
Textbook and/or Teaching Materials				
Instructor	All faculty of the department			

Course Objectives

(1) Can set a research topic on their own by applying and integrating basic knowledge of engineering, and find and solve problems systematically and practically from a broader perspective.
(2) Master data processing technologies and the theories and methods of information transfer, and can apply them to various design and theoretical analyses.
(3) Can develop self-learning abilities to continuously explore things.
(4) Can read and understand Japanese and English technical papers related to the research topic and use them for their own research.
(5) Can summarize the research results obtained as technical papers, and convey them to others through a presentation to have a discussion.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Can set an appropriate research topic on their own by applying and integrating basic knowledge of engineering, and find and solve problems systematically and practically from a broader perspective.	Can set a research topic on their own by applying and integrating basic knowledge of engineering, and find and solve problems systematically and practically from a broader perspective.	Cannot set a research topic on their own by applying and integrating basic knowledge of engineering, or find and solve problems systematically and practically from a broader perspective.
Achievement 2	Deeply master data processing technologies and the theories and methods of information transfer, and can apply them to various design and theoretical analyses.	Master data processing technologies and the theories and methods of information transfer, and can apply them to various design and theoretical analyses.	Cannot master data processing technologies and the theories and methods of information transfer, or apply them to various design and theoretical analyses.
Achievement 3	Can develop self-learning abilities to continuously and accurately explore things	Can develop self-learning abilities to continuously explore things.	Cannot develop self-learning abilities to continuously explore things.
	Can read and deeply understand Japanese and English technical papers related to the research topic and use them appropriately for their own research.	Can read and understand Japanese and English technical papers related to the research topic and use them for their own study.	Cannot read Japanese and English technical papers related to the research topic, or understand and use them for own research.
	Can summarize the research results obtained as technical papers, and accurately convey them to others through a presentation to have a deep discussion.	Can summarize the research results obtained as technical papers, and convey them to others through a presentation to have a discussion.	Cannot summarize the research results obtained as technical papers, or convey them to others through a presentation to have a discussion.

Assigned Department Objectives

学習・教育到達度目標 (B) 学習・教育到達度目標 (D) 学習・教育到達度目標 (E) 学習・教育到達度目標 (F) 学習・教育到達度目標 (G) 学習・教育到達度目標 (H)

Teaching Method

Outline	The aim of this class is to understand and analyze issues in their research topics based on the results of the learning up to the 4th year and the basic knowledge gained through Preliminaries to Graduation Thesis, and solve problems voluntarily and continuously by taking appropriate approach. Another aim is to convey research results accurately to others through papers and presentations.
Style	Graduation Thesis class is conducted by several faculty members (laboratories). Students will work on document research, experiments, simulations, examinations, etc. under the guidance of their supervisor at one of these laboratories.
Notice	They are expected to frequently discuss research results with their supervisor. If they cannot conduct research during the hours of Graduation Thesis class, transfer to other hours with permission from the supervisor. Students who spend less than 202.5 hours on research will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☑ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

				Theme	Goals
1st Semester	1st Quarter	1st		Graduation research	Can independently conduct document research, experiments, simulations, examination, etc. under the supervisor.
		2nd		Same as above	Same as above
		3rd		Same as above	Same as above
		4th		Same as above	Same as above

		5th	Same as above	Same as above
		6th	Same as above	Same as above
		7th	Same as above	Same as above
		8th	Same as above	Same as above
	2nd Quarter	9th	Same as above	Same as above
		10th	Same as above	Same as above
		11th	Same as above	Same as above
		12th	Same as above	Same as above
		13th	Same as above	Same as above
		14th	Same as above	Same as above
		15th	Same as above	Same as above
		16th	No final exam	
2nd Semester	3rd Quarter	1st	Graduation research	Can independently conduct document research, experiments, simulations, examination, etc. under the supervisor.
		2nd	Preparation for the interim presentation of the graduation research	Can create posters and handouts to use in the interim presentation of the graduation research.
		3rd	Interim presentation of the graduation research	Can present the research results so far using posters.
		4th	Graduation research	Can independently conduct document research, experiments, simulations, examination, etc. under the supervisor.
		5th	Same as above	Same as above
		6th	Same as above	Same as above
		7th	Same as above	Same as above
		8th	Same as above	Same as above
	4th Quarter	9th	Same as above	Same as above
		10th	Writing graduation thesis	Can compile the results of the graduation research and write a graduation thesis.
		11th	Same as above	Same as above
		12th	Same as above	Same as above
		13th	Preparation for the graduation research presentation	Can create a resume to hand out in the graduation research presentation.
		14th	Same as above	Can create slides to use in the graduation research presentations.
		15th	Graduation research presentation	Can use slides to present the results of the graduation research orally and answer questions appropriately.
		16th	No final exam	

Evaluation Method and Weight (%)

	Initiative	Interim Presentation	Graduation thesis	Final Presentation	Total
Subtotal	10	20	50	20	100
Basic Proficiency	0	0	0	0	0
Specialized Proficiency	10	20	50	20	100
Cross Area Proficiency	0	0	0	0	0

Akashi College		Year	2021		Course Title	Power Electronics

Course Information

Course Code	0044		Course Category	Specialized / Compulsory
Class Format	Lecture		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	Second Semester		Classes per Week	2
Textbook and/or Teaching Materials				
Instructor	HIROTA Atsushi			

Course Objectives

1) The ability to understand the operating principles of various power electronics circuits, calculate various quantities such as average voltage, currents, and power, and evaluate them quantitatively.
2) The ability to understand the advantages and disadvantages of using power electronics technology, understand the problems, and think about what measures are necessary.
3) The ability to voluntarily and continuously organize reports and materials through exercise problems and reports, and to find the characteristics of power electronics circuits and their optimal range of applications.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Fully understand the operating principles of various power electronics circuits, and can calculate various quantities such as average voltage, currents, and power, and evaluate them quantitatively.	Understand the operating principles of various power electronics circuits, and to calculate various quantities such as average voltage, current, and power, and to evaluate them quantitatively	Do not understand the operating principles of various power electronics circuits, and cannot calculate various quantities such as average voltage, current, and power, or evaluate them quantitatively
Achievement 2	Understand the advantages and disadvantages of using power electronics technology, understand the issues, and can fully consider what measures are necessary	Understand the advantages and disadvantages of using power electronics technology, understand the issues, and can consider what measures are necessary	Do not understand the advantages and disadvantages of using power electronics technology, understand the issues, and cannot consider what measures are necessary
Achievement 3	Can voluntarily and continuously organize reports and materials through exercise problems and reports, and can effectively find the characteristics of power electronics circuits and their optimal range of applications.	Can voluntarily and continuously organize reports and materials through exercise problems and reports, and can find the characteristics of power electronics circuits and their optimal range of applications.	Cannot voluntarily and continuously organize reports and materials through exercise problems and reports, or find the characteristics of power electronics circuits and their optimal range of applications.

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達度目標 (F) 学習・教育到達度目標 (H)

Teaching Method

Outline	Power-electronics technology is an interdisciplinary field for converting electricity using semiconductor switch devices. The range of applications includes consumer electronics devices, information field, electric power applications, and renewable energy generation, making it an essential technology for modern social life. This course will explain and deepen students' understanding of the basics of power electronics and make them understand the importance of this technology.
Style	Classes will be conducted focusing on lectures, and explanations of related technologies may be added.
Notice	This course requires students to use the knowledge they have acquired in the past, such as the content of Electric Circuits and Circuit Theory, and the Fourier transform, therefore it will be necessary for them to review what they have already learned independently, in addition to the studying for this course. Take notes and thoroughly review the material. Makeup exams, etc. may be held if students with outstanding efforts fall short of the passing score by a small margin, and make a request. All assignments are required to be submitted. Students who miss 1/3 or more of classes will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Power electronics overview	Understand the position, importance, and current situation of power electronics technology, and actual examples.
		2nd	Semiconductor devices for electrical power (1)	Understand the current-controlled semiconductor switching devices used in power electronics equipment.
		3rd	Semiconductor devices for electrical power (2)	Understand the voltage-controlled semiconductor switching devices used in power electronics equipment.
		4th	DC-DC converter (1)	Understand the basics of DC-DC converters and the circuit operation of a buck DC-DC converter.
		5th	DC-DC converter (2)	Understand the circuit operation of a boost DC-DC converter.
		6th	DC-DC converter (3)	Understand the circuit operation of a buck/boost DC-DC converter.

		7th	Review	Can review and check the content so far.
		8th	Midterm exam	
	4th Quarter	9th	DC-AC conversion (1)	Understand the basics of DC-AC conversion through an inverter circuit using switch elements.
		10th	DC-AC conversion (2)	Understand the control method used for inverters.
		11th	DC-AC conversion (3)	Understand various types of inverters, such as PWM inverters and three-phase inverters.
		12th	Rectifier circuits (1)	Understand the basic circuit operation of a rectifier circuit.
		13th	Rectifier circuits (2)	Understand the smoothing circuits used in rectifier circuits such as choke input type and capacitor input type smoothing circuits.
		14th	Rectifier circuits (3)	Understand the operation of a rectifier circuit with output voltage control function.
		15th	Examples of power electronics applications	Can introduce the application examples of power electronics equipment that have been discussed so far, and understand the importance of power electronics technology.
		16th	Final exam	

Evaluation Method and Weight (%)

	Examination	Report	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	70	30	0	0	0	0	100
Basic Proficiency	0	0	0	0	0	0	0
Specialized Proficiency	70	30	0	0	0	0	100
Cross Area Proficiency	0	0	0	0	0	0	0

Akashi College		Year	2021		Course Title	Solid State Physics C

Course Information

Course Code	0045			Course Category	Specialized / Compulsory	
Class Format	Lecture			Credits	School Credit: 1	
Department	Electrical and Computer Engineering Electrical Engineering Course			Student Grade	5th	
Term	First Semester			Classes per Week	2	
Textbook and/or Teaching Materials	荻野俊郎「エッセンシャル応用物性論」朝倉書店					
Instructor	OHMUKAI Masato					

Course Objectives

(1)光の粒子性について知る
(2)結晶構造について知る
(3)Ｘ線回折の原理について知る

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目[1]	光の粒子性について定量的な議論ができる。	光の粒子性について定性的な議論ができる。	光の粒子性について議論できない。
評価項目[2]	結晶構造の細かい分類ができる。	結晶構造における代表的な例がわかる	結晶構造について実例を挙げることができない。
評価項目[3]	Ｘ線回折の原理を定量的に説明できる。	Ｘ線回折の概略を身に着けている。	Ｘ線回折について知識がない。

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達度目標 (H)

Teaching Method

Outline	固体物性Ｃでは４年の固体物性Ａ、Ｂで取り扱わなかった事項について学ぶ。例えば固体の原子配列にかかわる物理的な構造に関する内容を取り扱う。
Style	最初に講義を行い概略を説明したあと、各自が自主学習を行う。質問等の個人指導を行い、不明な点を解消する。
Notice	授業中は集中して理解に努め、わからないところを授業中に質問して解決していくプロセスが求められる。毎回復習が必要。 合格の対象としない欠席条件(割合) 1/3以上の欠課

Characteristics of Class / Division in Learning

☑ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	熱放射	熱放射におけるプランクの仮説の背景と内容について理解する。
		2nd	光電効果とコンプトン効果	光電効果とコンプトン効果の定量的議論を例にとり、光の粒子性について理解する。
		3rd	原子スペクトルと気体のエネルギー等分配則	原子スペクトルの構造を理解し、気体のエネルギー等分配則について理解する。
		4th	気体の分子運動論	金属や半導体中での電子の振る舞いの基礎となる理論を理解する。
		5th	結晶構造とブラベー格子	結晶の構造を格子という概念で理解し、どのような種類があるかを知る。
		6th	結晶格子の実例と充填率	代表的な結晶について充填率を計算できるようになる。
		7th	復習	これまでの内容を概観して理解を深める。
		8th	中間試験	６０点以上を取得する。
	2nd Quarter	9th	Ｘ線回折の基礎	Ｘ線回折の基礎であるブラッグの条件を定量的に理解する。
		10th	Ｘ線回折の応用	実際の測定において気を付けなければいけないことを知る。
		11th	結晶の不完全性	結晶の点欠陥と線欠陥の例について学ぶ。
		12th	１種原子の格子振動	１種類の原子からなる格子の振動について定量的に学ぶ。
		13th	２種原子の格子振動	２種類の原子からなる格子の振動について定量的に学ぶ。
		14th	固体の比熱の理論	固体の比熱の理論を３種類学ぶ。
		15th	復習	これまでの内容を整理して理解を深める。
		16th	期末試験	６０点以上を取得する。

Evaluation Method and Weight (%)

	試験	課題	相互評価	態度	ポートフォリオ	その他	Total
Subtotal	70	0	0	0	0	30	100
基礎的能力	0	0	0	0	0	0	0
専門的能力	70	0	0	0	0	30	100

| 分野横断的能力 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Akashi College		Year	2021		Course Title	Experiments of Electrical Engineering II

Course Information

Course Code	0046		Course Category	Specialized / Compulsory
Class Format	Experiment		Credits	School Credit: 2
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	First Semester		Classes per Week	4
Textbook and/or Teaching Materials				
Instructor	KAMI Yasushi			

Course Objectives

(1) Can measure and verify the characteristics of a transistor.
(2) Can examine the behavior of an amplifier circuit using a transistor.
(3) Can determine the specifications of a system that satisfies the conditions given by the experiment supervisor, and present them.
(4) Can work in a group.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Can measure the characteristics of a transistor and examine the results.	Can measure the characteristics of a transistor.	Cannot measure the characteristics of a transistor.
Achievement 2	Can examine the results of an experiment on the behavior of an op amp in addition to an amplifier circuit using a transistor, and propose and design circuits, etc. utilizing these characteristics.	Can examine the results of an experiment on the behavior of an amplifier circuit using a transistor.	Do not know the behavior and basic characteristics of an amplifier circuit using a transistor.
Achievement 3	Can determine the specifications of a system that satisfies the conditions given by the experiment supervisor, and can present them in an easy-to-understand way.	Can determine the specifications of a system that satisfies the conditions given by the experiment supervisor.	Cannot determine the specifications of a system that satisfies the conditions given.
	Can work in a group by cooperating and sharing roles to solve the issues assigned.	Can work in a group on the issues assigned.	Cannot work in a group.

Assigned Department Objectives

学習・教育到達度目標 (B) 学習・教育到達度目標 (E) 学習・教育到達度目標 (G)

Teaching Method

Outline	In this course, students will design and implement systems using the knowledge and techniques of electrical and electronic engineering that they acquired previously. The aim of this class is to foster engineers with respect for others and high cooperativeness and leadership by conducting experiments in groups. It also aims at acquiring presentation skills and written expressions necessary for scientific reports through presentations and reports.
Style	Students will design and implement systems in PBL format, focusing on amplifier circuits using transistors. They will work in groups of four to five, and give presentations and submit reports as appropriate. Each group should voluntarily think and prepare/pre-study for the group work.
Notice	Students will not receive a passing grade unless they give all specified presentations and submit reports by the due date. Precautions regarding the experiments will be given during the first week. The content of subjects already taken may be needed, so do review. Students must pay attention to everything from taking roll-call to cleaning the lab and putting away the equipment. Students who miss 1/3 or more of classes will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Precautions during experiment and concept development	Understand the various precautions related to engineering experiments and the content and purpose of this experiment course. Can discuss the concept of the system to be developed.
		2nd	Presentation of concept and development of specifications 1	Can present each team's concept. Can exchange opinions on the specifications of the system to be developed.
		3rd	Development of specifications 2	Can agree on the specifications of the system as a group.
		4th	Development of specifications 3	Can submit a plan on how to meet the specifications determined previously.
		5th	Selection and planning of elements and review of proposal for sharing of roles	Can select the parts necessary to achieve the specifications. Can summarize the sharing of roles and the future plans of the group.
		6th	Preparation for presentation	Can prepare for the next week's report meeting

		7th	Specification report meeting	Can present the specifications decided, the methods to meet the specifications, and the sharing of roles as determined by each group.
		8th	Track progress	Each team reviews progress and redesigns specifications and plans.
	2nd Quarter	9th	Measuring of the characteristics of the elements to be used and confirmation of how to use them	Determine the elements to be used, measure their characteristics, verify how to use them and examine whether they are suitable for the specifications.
		10th	System design and implementation 1	Can determine exactly how to build the system as target.
		11th	System design and implementation 2	Can implement the system by the construction method determined by each group.
		12th	System design and implementation 3	Can complete the implementation of the system as determined by each group.
		13th	System design and implementation 4	Can evaluate the completed system and submit proposals for improvement
		14th	System design and implementation 5	Can execute the improvement proposals that have been submitted.
		15th	Final presentation meeting	Can demonstrate and present implemented systems.
		16th	No final exam	Submit reports instead

Evaluation Method and Weight (%)

	Specification Presentation	Final Presentation	Report	Total
Subtotal	30	35	35	100
Basic Proficiency	0	0	0	0
Specialized Proficiency	30	35	35	100
Cross Area Proficiency	0	0	0	0

Akashi College	Year	2021		Course Title	Probability and Statistics

Course Information

Course Code	0047		Course Category	Specialized / Elective
Class Format	Lecture		Credits	Academic Credit: 2
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	First Semester		Classes per Week	2
Textbook and/or Teaching Materials				
Instructor	HAMADA Yukihiro			

Course Objectives

[1] Can organize 1- and 2-dimensional data.
[2] Understand the concept of probability and can calculate the probability of an event.
[3] Understand the concept of probability distribution and can calculate the amount of samples.
[4] Understand the concepts of statistics and can calculate basic statistics.
[5] Can make statistical estimates.
[6] Can perform statistical tests.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Can correctly calculate mean, variance, covariance, and correlation coefficient and create a histogram.	Can calculate mean, variance, covariance, and correlation coefficient and create a histogram.	Cannot calculate mean, variance, covariance, and correlation coefficient and create a histogram.
Achievement 2	Can correctly calculate the probability and conditional probability of an event, and determine the independence of the event correctly.	Can calculate the probability and conditional probability of an event, and determine the independence of the event.	Cannot calculate the probability and conditional probability of an event, and determine the independence of the event.
Achievement 3	Can correctly calculate the probability of an event under binomial distribution, Poisson distribution, and normal distribution.	Can calculate the probability of an event under binomial distribution, Poisson distribution, and normal distribution.	Cannot calculate the probability of an event under binomial distribution, Poisson distribution, and normal distribution.
Achievement 4	Understand samples and populations and can correctly calculate sample mean, sample variance, and unbiased variance.	Understand samples and populations and can calculate sample mean, sample variance, and unbiased variance.	Do not understand samples and populations and cannot calculate sample mean, sample variance, and unbiased variance.
Achievement 5	Can accurately make point estimation and interval estimation.	Can make point estimation and interval estimation.	Cannot make point estimation and interval estimation.
Achievement 6	Can accurately test the population mean and the population variance.	Can test the population mean and the population variance.	Cannot test the population mean and the population variance.

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達目標 (F)

Teaching Method

Outline	The purpose of the probabilities and statistics is to identify the pattern from various coincidence that occurs around us, explain what happened based on the pattern, and estimate the whole from the part. In this course, students will learn the basics of probability theory and statistics.
Style	Each week, the class will alternate between explanation and exercise about the content you will learn for the week.
Notice	This course's content will amount to 90 hours of study in total. These hours include the learning time guaranteed in classes and the standard self-study time required for review and completing assignment reports. There will be two assignments, and both of them must be submitted by the due date. One of the assignments involves programming in C. Students should have a prior knowledge of linear algebra and calculus. Try to solve the questions or exercise problems yourself and score it against the answer. Students who miss 1/3 or more of classes will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☑ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Course guidance and 1-dimensional data 1of 2	Understand the objectives and grading method of the course. Can create a frequency distribution table and a histogram of the data.
		2nd	1-dimensional data 2 of 2	Can calculate mean, median, mode, variance, and standard deviation of the data.
		3rd	2-dimensional data	Can calculate the correlation coefficient and regression line of 2-dimensional data.
		4th	Discrete probability	Can explain the meaning and nature of trials, events, and probability.
		5th	Conditional probability and probability variables	Can calculate conditional probability. Also, can determine whether two events are independent.

		6th	Probability variables and distribution	Can explain discrete probability variables and discrete probability distributions. Also, can explain the sequential probability variables and the probability density function.
		7th	Mean and variance of probability variables	Can calculate mean and variance of probability variables.
		8th	Midterm examination	
	2nd Quarter	9th	Binomial distribution and Poisson distribution	Can explain the binomial distribution and Poisson distribution and can calculate their means and distributions.
		10th	Normal distribution	Can explain and use normal distribution. Also, can explain the relationship between binomial distribution and normal distribution.
		11th	Sample distribution	Can explain population, sample, sample mean, sample variance, unbiased-variance, the law of large numbers, and central limit theorem.
		12th	Central limit theorem	Can explain normal population and central limit theorem.
		13th	Various probability distributions	Can explain the chi-squared distribution and t-distribution.
		14th	Estimation and test 1 of 2	Can perform interval estimation of population mean when the population variance is known and unknown. Also, can explain what we claim by statistical tests.
		15th	Test 2 of 2	Can perform two-tailed and one-tailed tests for the population mean when the population variance is known and unknown.
		16th	Final examination	

Evaluation Method and Weight (%)

	Examination	Task	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	80	20	0	0	0	0	100
Basic Proficiency	0	0	0	0	0	0	0
Specialized Proficiency	80	20	0	0	0	0	100
Cross Area Proficiency	0	0	0	0	0	0	0

Akashi College		Year	2021		Course Title	Information Theory

Course Information

Course Code	0048		Course Category	Specialized / Elective
Class Format	Lecture		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	First Semester		Classes per Week	2
Textbook and/or Teaching Materials				
Instructor	NAKAI Yuichi			

Course Objectives

(1) Understand how the amount of information is defined and how its validity is guaranteed.
(2) Understand the definition of various sources of information and the meaning of entropy in each source, and can derive it.
(3) Understand the types of coding and the conditions that coding should meet, and can derive the average code length and its limits.
(4) Understand Shannon's first theorem and its significance.
(5) What is a communication channel and their types. In addition, understand how they can be expressed.
(6) Understand the significance of Shannon's second theorem.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Can accurately explain how the amount of information is defined and how its validity is guaranteed.	Can explain how the amount of information is defined and how its validity is guaranteed.	Cannot explain how the amount of information is defined and how its validity is guaranteed.
Achievement 2	Understand the definition of various sources of information and the meaning of entropy in each source, and hence can derive it accurately.	Understand the definition of various sources of information and the meaning of entropy in each source, and hence can derive it.	Do not understand the definition of various sources of information and the meaning of entropy in each source.
Achievement 3	Understand the types of coding and the conditions that coding should meet, and can derive the average code length and its limits accurately.	Understand the types of coding and the conditions that coding should meet, and can derive the average code length and its limits.	Do not understand the types of coding and the conditions that coding should meet, the average code length and its limits.
	Can accurately explain Shannon's first theorem and its significance.	Can explain Shannon's first theorem and its significance.	Cannot explain Shannon's first theorem and its significance.
	Can specifically explain what is a communication channel and their types, and how they can be expressed.	Can explain what is a communication channel and their types, and how they can be expressed.	Cannot explain what is a communication channel and their types, and how they can be expressed.
	Can accurately explain the significance of Shannon's second theorem.	Can explain the significance of Shannon's second theorem.	Cannot explain the significance of Shannon's second theorem.

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達目標 (H)

Teaching Method

Outline	The outcome of information theory, which is founded by C.E. Shannon, are indispensable in modern life. In this lecture, we will explain the knowledge necessary to achieve "speedy" and "accurate" information transmission in communication systems. The first half of the course begins with the quantification of information and continues on to the first theorem of Shannon. Shannon's second theorem will be taught in second half after discussing the definition of a communication channel.
Style	Classes will be held in a lecture style using slides. Students will be given practice questions for assignments, so actively work on them in order to test their understanding.
Notice	Classes will be given on the premises that students have the knowledge of probability and statistics, so understand these content well beforehand. Students who miss 1/3 or more of classes will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Model of a communication system	Can explain the model of a communication system which is assumed in information theory and quantify information.
		2nd	Memoryless sources and entropy	Can explain the simplest source of information, the memoryless source, and the entropy that provides clues to the internal structure of the source.
		3rd	Markov source and entropy	Can explain the Markov source, which is close to real-world information sources, and derive its entropy.

		4th	What is coding	Can define coding and explain some conditions that coding must meet.Can explain the definition of average coding length and its limit for instant decryption.
		5th	Shannon's source coding theorem	Can explain Shannon's source coding theorem and its significance.
		6th	Huffman coding	Can construct the Huffman code as a coding scheme that can configure compact coding.
		7th	Communication channel	Can explain the definition of communication channels and how they are represented.
		8th	Midterm exam	
	2nd Quarter	9th	Mutual information	Can explain what is mutual information, which is defined by the information transmitted over the communication channel.
		10th	Various communication channels	Can explain noiseless, deterministic, and longitudinal, and degraded communication channels.
		11th	Communication channel capacity	Can explain the definition of communication channel capacity derived from consideration of the mutual information.
		12th	Improved communication channel reliability	Can explain how to improve reliability in the transmission of information over communication channels.
		13th	Error rates and rules for judging	Can explain the rules for reducing the error rate in communication channels.
		14th	Shannon's noisy-channel coding theorem	Can explain Shannon's noisy-channel coding theorem for a binary symmetric channel.
		15th	Channel coding	Can explain the basic concept of some channel coding schemes.
		16th	Final exam	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	100	0	0	0	0	0	100
Basic Proficiency	0	0	0	0	0	0	0
Specialized Proficiency	100	0	0	0	0	0	100
Cross Area Proficiency	0	0	0	0	0	0	0

Akashi College		Year	2021		Course Title	Fundamentals of Communication Systems

Course Information

Course Code	0049		Course Category	Specialized / Elective
Class Format	Lecture		Credits	Academic Credit: 2
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	First Semester		Classes per Week	2
Textbook and/or Teaching Materials	教科書：植松友彦、松本隆太郎「基本を学ぶ通信工学」オーム社			
Instructor	TAKITA Makoto			

Course Objectives

以下の能力を修得することを目標とする.
1) 通信システムを理解するために必要な数学的準備や基礎的な信号処理論について理解し，解析できる.
2) 通信システムにおける簡単な信号処理システムを設計できる.
3) 課題報告作成による自主的・継続的学習能力を得る.

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目1	通信システムを理解するために必要な数学的準備や基礎的な信号処理論について正確に理解し，解析できる.	通信システムを理解するために必要な数学的準備や基礎的な信号処理論について理解し，解析できる.	通信システムを理解するために必要な数学的準備や基礎的な信号処理論について理解できない.
評価項目2	通信システムにおける簡単な信号処理システムを正確に設計できる.	通信システムにおける簡単な信号処理システムを設計できる.	通信システムにおける簡単な信号処理システムを設計できない.
評価項目3	必要数の課題レポートを正確に作成できる.	必要数の課題レポートを作成できる.	必要数の課題レポートを作成できない.

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達度目標 (F) 学習・教育到達度目標 (H)

Teaching Method

Outline	本授業では通信システムを理解するために必要な基礎項目および簡単なアナログ通信システムについて解説する．科目の構成としては，後期開講科目である「通信方式」と組となる科目であるため，本科目と「通信方式」の両科目の受講を薦めたい.
Style	通信システムの基礎とアナログ変復調方式に重点を置いて、教科書を用いながら解説していく。自己学習が重要な科目であるので、予習復習をしっかりやりながら取り組むこと。 連絡員：大向雅人
Notice	本科目は，授業で保証する学習時間と，予習・復習および課題レポート作成に必要な標準的な自己学習時間の総計が90時間に相当する学習内容である．合格の対象としない欠席条件(割合) 1/3以上の欠課

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	導入 通信システムの基本構成と本授業の位置付けを行う。 通信システムを学ぶための数学的基礎として欠かせないフーリエ変換等を解説する.	通信システムについて説明できる。変調の役割について説明できる。
		2nd	ディジタル信号処理とアナログ信号処理 ディジタル信号処理とアナログ信号処理を比較しながら、それぞれの特徴を説明する。	ディジタル処理とアナログ処理の概要を説明できる。
		3rd	信号波の解析 フーリエ級数やフーリエ変換を用いた信号波の表現法を説明する。	周期信号と非周期信号をフーリエ級数とフーリエ変換を用いて表現できる。
		4th	連続時間システムと離散時間システム "電気回路などの連続時間システムとディジタル信号を扱う 離散時間システムとの関係について説明する。	連続時間システムと離散時間システムについて説明できる。
		5th	線形時不変システム 線形性，時不変性などのシステムの基本的な性質およびたたみ込み演算について解説する.	"離散時間システムの線形性、時不変性および畳み込み演算について説明できる。
		6th	システムの周波数特性 システムの周波数特性およびその有効性について解説する。伝達関数を用いた周波数特性の求め方について解説する。	"離散時間システムの周波数特性について説明でき、かつ導出できる。
		7th	中間演習 これまでの内容を演習を通して復習し、理解を深める。	与えられた課題をやり遂げることができる。
		8th	中間試験	６０点以上を取得する。
	2nd Quarter	9th	振幅変調方式（1） 変調の役割や意義について説明する。振幅変調方式の概要を説明する。	各変調方式の役割について説明できる。振幅変調方式の概要を説明できる。
		10th	振幅変調方式（2） 振幅変調とその復調について説明する。	振幅変調方式の変調方法と復調方法を説明できる。

		11th	角度変調方式（１） 位相変調と周波数変調の概略を説明し、周波数変調の占有帯域幅について説明する。	位相変調と周波数変調の性質を説明できる。
		12th	角度変調方式（２） 周波数変調とその復調について説明する。	周波数変調方式の変調方法と復調方法を説明できる。
		13th	パルス変調とパルス符号変調 標本化定理と搬送波として周期パルス信号を用いたパルス符号変調について説明する。	標本化定理とパルス変調について説明できる。
		14th	高速フーリエ変換 "離散的な周波数スペクトルを少ない演算量で得られる高速 フーリエ変換について解説する。	"高速フーリエ変換について説明でき、および離散フーリエ変換との関係について説明できる。
		15th	期末演習 これまでの内容を演習を通して復習し、理解を深める。	与えられた課題をやり遂げることができる。
		16th	期末試験	６０点以上を取得する。

Evaluation Method and Weight (%)

	試験	課題レポート	Total
Subtotal	70	30	100
基礎的能力	0	0	0
専門的能力	70	30	100
分野横断的能力	0	0	0

Akashi College		Year	2021		Course Title	Communication System

Course Information

Course Code	0050		Course Category	Specialized / Elective
Class Format	Lecture		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	Second Semester		Classes per Week	2
Textbook and/or Teaching Materials	教科書：植松友彦、松本隆太郎「基本を学ぶ通信工学」オーム社			
Instructor	TAKITA Makoto			

Course Objectives

以下の能力を修得することを目標とする.
１）アナログ・ディジタル通信システムおよびその基本的な構成要素について理解する。
２）各種ディジタル変調方式の原理、特徴について理解する。
３）多重通信方式、スペクトル拡散変調の原理、特徴について理解する。

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目1	アナログ・ディジタル通信システムおよびその基本的な構成要素について正確に説明できる.	アナログ・ディジタル通信システムおよびその基本的な構成要素について説明できる.	アナログ・ディジタル通信システムおよびその基本的な構成要素について説明できない.
評価項目2	各種ディジタル変調方式の原理,特徴について正確に説明できる.	各種ディジタル変調方式の原理,特徴について説明できる.	各種ディジタル変調方式の原理,特徴について説明できない.
評価項目3	多重通信方式、スペクトル拡散変調の原理、特徴について正確に説明できる。	多重通信方式、スペクトル拡散変調の原理、特徴について説明できる。	多重通信方式、スペクトル拡散変調の原理、特徴について説明できない。

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達度目標 (H)

Teaching Method

Outline	本講義では，アナログ・ディジタル通信システムについて解説する．各種変調方式を用いて情報伝送を行うための基礎理論について理解することを目標とする．
Style	アナログ通信に加え、デジタル通信の変復調方式に重点を置いて、教科書を用いながら解説していく。自己学習が重要な科目であるので、予習復習をしっかりやりながら取り組むこと。
Notice	前期に開講される「基礎通信工学」を受講していることが望ましい（受講の条件ではない）．合格の対象としない欠席条件(割合) 1/3以上の欠課

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	導入と復習 本授業の位置付けを行い、基礎通信工学で学習した項目を復習する。	基礎通信工学での学習したことの概要を説明できる。
		2nd	確率過程の基礎 通信システムにおける雑音の取り扱いにおいて重要な役割を果たす確率過程について説明する。	確率過程について基本的概念を説明できる。
		3rd	振幅変調の雑音特性 雑音があるときの振幅変調方式のふるまいを説明する。	"復調信号の信号電力対雑音比について，各振幅変調方式別に説明できる。
		4th	周波数変調の雑音特性 雑音があるときの周波数変調方式のふるまいを説明する。	"周波数変調方式における復調信号の信号電力対雑音比を説明できる。
		5th	ベースバンドディジタル変調 ディジタル変調について概説し、その一つであるベースバンドディジタル変調について説明する。	ベースバンドディジタル変調について説明できる。
		6th	ディジタル変調の雑音特性 白色ガウス雑音に対する特性を説明する。	雑音による信号の誤りについて説明できる。
		7th	中間演習 これまでの内容を演習を通して復習し、理解を深める。	与えられた課題をやり遂げることができる。
		8th	中間試験	６０点以上を取得する。
	4th Quarter	9th	パスバンドディジタル変調（１） 信号空間解析と相関受信機について説明する。	通信システムの特性を解析でき、相関受信機による信号の判定方法を説明できる。
		10th	パスバンドディジタル変調（２） ２元、多元パルス振幅変調（PAM）について説明する。	PAM方式について説明できる。
		11th	パスバンドディジタル変調（３） 直行振幅変調（QAM)について説明する。	QAM方式について説明できる。
		12th	Phase Shift Keying（PSK）方式 PSK方式について説明する。	PSK方式について説明できる。
		13th	"Orthogonal Frequency Division Multiplexing（OFDM）方式 OFDM方式について説明する。	OFDM方式について説明できる。

		14th	多重通信方式 周波数分割多重（FDM）、時分割多重（TDM）について説明する。	多重通信について説明できる。
		15th	スペクトル拡散変調 PN符号を用いた直接系列変調（DSM)による拡散変調方式を説明する。	スペクトル拡散変調について説明できる。
		16th	期末試験	６０点以上を取得する。

Evaluation Method and Weight (%)

	試験	課題レポート	Total
Subtotal	70	30	100
基礎的能力	0	0	0
専門的能力	70	30	100
分野横断的能力	0	0	0

Akashi College	Year	2021		Course Title	Information Network

Course Information

Course Code	0051		Course Category	Specialized / Elective
Class Format	Lecture		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	First Semester		Classes per Week	2
Textbook and/or Teaching Materials				
Instructor	INOUE Kazunari			

Course Objectives

The overall goal is to understand the basics of network technology, and the individual goal is to acquire the following abilities.
1) Network history, TCP / IP protocol
2) Technology that constitutes a LAN
3) IP packets and routing
4) Control method by TCP and UDP
5) Network security and encryption

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Fully understand the history of networks and TCP / IP communication protocols.	Understand the history of networks and TCP / IP communication protocols.	Cannot understand the history of networks and TCP / IP communication protocols.
Achievement 2	Fully understand the topology and transmission method for building a LAN.	Understand the topology and transmission method for building a LAN.	Cannot understand the topology and transmission method for building a LAN.
Achievement 3	Fully understanding of Ethernet frames and forwarding, IP packets and routing.	Understanding of Ethernet frames and forwarding, IP packets and routing.	Cannot understanding of Ethernet frames and forwarding, IP packets and routing.

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達度目標 (F) 学習・教育到達度目標 (H)

Teaching Method

Outline	Learn the basics of the information networks. Learn the analog signal digitization and the transmission methods. Understand the topology for LAN construction, OSI reference and TCP / IP, and learn the various communication protocols. Learn the network security. In this subject, faculty members who have practical experience in developing routers and other network devices will give lectures and exercises.
Style	With the goal of understanding the basics of network technology regarding LAN construction, the Internet, and security, lectures and exercises will be held from the 1st to the 15th week.
Notice	Absence conditions (ratio) that are not eligible for passing 1/3 or more absenteeism

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	The history of networks and the transition of communication methods will be explained.	Understand that the history of networks and the transition of communication methods will be explained.
		2nd	Digitization, coding and compositing of analog signals will be described. Specific examples of digital transmission and serial interface will be described.	Understand that the Digitization, coding and compositing of analog signals will be described. Specific examples of digital transmission and serial interface will be described.
		3rd	The difference from the circuit switching method to the packet switching method and the technologies that make up the Internet will be explained.	Understand that the difference from the circuit switching method to the packet switching method and the technologies that make up the Internet will be explained.
		4th	The technical outline of each layer that composes the OSI reference model and TCP / IP will be explained.	Understand that the technical outline of each layer that composes the OSI reference model and TCP / IP will be explained.
		5th	Explain the flow of encapsulation and decapsulation on the transmitting side and receiving side, and L2 / L3 / L4 / L7 processing.	Understand that the flow of encapsulation and decapsulation on the transmitting side and receiving side, and L2 / L3 / L4 / L7 processing.
		6th	Various network topologies such as bus type and star type will be described. The technology that configures the LAN, switches / routers, will be explained.	Understand that the various network topologies such as bus type and star type will be described. Also, understand that the technology that configures the LAN, switches / routers, will be explained.
		7th	Describes Ethernet frame formats, headers, payloads, trailer roles and MAC addresses.	Understand that the Ethernet frame formats, headers, payloads, trailer roles and MAC addresses.
		8th	Mid-term exam	Mid-term exam
	2nd Quarter	9th	Describes the IP packet format, address setting method, and classful address. The routing table and route control will be described.	Understand that the the IP packet format, address setting method, and classful address. The routing table and route control will be described.

		10th	Describes the definition of IP address, classful / classless, and calculation of the number of networks / hosts.	Understand that the definition of IP address, classful / classless, and calculation of the number of networks / hosts.
		11th	The DHCP server function will be described. Technology to help IP Describe the ICMP echo request / response. The ARP between L2 / L3 will be explained.	Understand that the DHCP server function will be described. Technology to help IP Describe the ICMP echo request / response. The ARP between L2 / L3 will be explained.
		12th	The connectionless type / connectionless type protocol will be described. The port number and passing to L7 will be explained.	Understand that the connectionless type / connectionless type protocol will be described. The port number and passing to L7 will be explained.
		13th	Describes services and protocols for using the Internet such as DNS, Web. Server and HTTP.	Understand that the services and protocols for using the Internet such as DNS, Web. Server and HTTP.
		14th	Explain the ethics, network security and encryption technology for handling threats and information hidden in networks.	Understand that the ethics, network security and encryption technology for handling threats and information hidden in networks.
		15th	The mobile communication and the access network will be described. Describe the IoT (Internet of Things) and non-IP networks.	Understand that the mobile communication and the access network will be described. Also, understand that the IoT (Internet of Things) and non-IP networks.
		16th	Final exam	Final exam

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	80	0	0	0	0	20	100
Basic Proficiency	0	0	0	0	0	0	0
Specialized Proficiency	80	0	0	0	0	20	100
Cross Area Proficiency	0	0	0	0	0	0	0

Akashi College		Year	2021		Course Title	Control Engineering Ⅱ

Course Information

Course Code	0052		Course Category	Specialized / Elective
Class Format	Lecture		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	First Semester		Classes per Week	2
Textbook and/or Teaching Materials				
Instructor	KAMI Yasushi			

Course Objectives

The objectives of this course are as follows:
1. Can derive the transient response of a system by using the inverse Laplace transform.
2. Can draw a polygonal line approximation of a Bode plot drawing from a transfer function. Conversely, can derive a transfer function from the polygonal line approximation of a Bode plot.
3. Can determine stability criteria of open-loop systems by using the Routh and Hurwitz stability criterion methods.
4. Can find a stability margin.
5. Can design PID control systems
6. Can derive the discrete time model of a system.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Can derive the transient response of a system by using the inverse Laplace transform.	Know that the transient response of a basic system can be derived by using the inverse Laplace transform after performing the formula deformation such as partial fraction decomposition and square completion.	Cannot calculate the inverse Laplace transform.
Achievement 2	Can both draw a polygonal line approximation of a Bode plot from a transfer function, and derive a transfer function from a polygonal line approximation of a Bode plot.	Can either draw a polygonal line approximation of a Bode plot from a transfer function, or derive a transfer function from a polygonal line approximation of a Bode plot.	Can neither draw a polygonal line approximation of a Bode plot from a transfer function, or derive a transfer function from a polygonal line approximation of a Bode plot
Achievement 3	Can determine the stability of an open loop system using both the Routh and Hurwitz stability criterion methods.	Can determine the stability of an open loop system using either the Routh or Hurwitz stability criterion methods.	Do not know the Routh nor the Hurwitz stability criterion method.
Achievement 4	Can find a stability margin or to indicate the applicable location in the frequency response.	Can explain the definition of a stability margin.	Cannot find a stability margin.
Achievement 5	Can design PID control systems with both the step response method and limit sensitivity method.	Can design PID control systems with either the step response method or the limit sensitivity method.	Cannot design PID control system
Achievement 6	Can derive the discrete time model of a system both using the solution of a differential equation and a differential approximation.	Can derive a discrete time model of a system using a solution of a differential equation or a differential approximation.	Cannot derive the discrete time model of a system.

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達目標 (F) 学習・教育到達目標 (H)

Teaching Method

Outline	While we are not very aware of in our daily lives, almost every device, including cars, air conditioners, and refrigerators, have a automatic control function. In this course, students will learn the basics of classical controls following Control Engineering I, such as the Routh and Hurwitz stability criterion methods and the design method of PID control systems, and also learn how to simulate the response of control systems by themselves.
Style	They will learn how to determine the transient response of a system, and about stability margins and PID control designs. In addition, as an overall summary of the previous study on control engineering, we will explain and demonstrate how to verify the response of a control system based on a simulation. In almost every class, after the content of the lesson is explained, there will be exercises to review the content.
Notice	Students can expect a large amount of calculations to do in assignments and periodic exams. Therefore, they should actually think and solve exercise problems assigned as appropriate themselves, to get used to doing calculations. Also, because there will be many assignments and exercises, make efforts to finish them quickly. Students who miss 1/3 or more of classes will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Introduction	Understand the outline of this course and know the content of the study and objectives.

		2nd	Laplace transform and inverse transform	Can describe the expression of the Laplace transform. Can calculate the inverse Laplace transform based on partial fraction decomposition or completing the square.
		3rd	Calculation of transient response	Can derive step responses, impulse responses, etc. using the inverse Laplace transform. Understand the meaning of convolute integrals, and can describe their expressions.
		4th	Polygonal line approximation of a Bode plot 1	Can draw a Bode plot (gain plot) line for a system with a transfer function consisting of the product of the primary element.
		5th	Polygonal line approximation of a Bode plot 1	Can determine a transfer function from the polygonal line approximation of a Bode plot (gain plot)for a system with a transfer function composed of the product of the primary element.
		6th	Stability margins	Can explain a stability margin. Can explain where a stability margin is indicated in the frequency response.
		7th	Review	Review the content of classes in the first half of the semester.
		8th	Midterm exam	
	2nd Quarter	9th	Internal stability, and Hurwitz stability criterion method	Can explain the concepts of external and internal stability and the conditions under which they match. Can determine the stability using Hurwitz stability criterion method
		10th	Routh stability criterion method	Can determine the stability, including special cases, using Routh stability criterion method,.
		11th	PID control	Can explain I/O characteristics of PID controllers (transfer function). Can explain the effect of P action. Can explain the effect of I action. Can explain the effect of D action..
		12th	How to design PID control systems	Can determine PID gain using the ultimate sensitivity method. Can determine the PID gain using the step response method.
		13th	Discretization of the model	Can derive a discrete time model by differentiating the differential equations. Can find a solution of a differential equation, and derive a discrete time model using it.
		14th	Control system design simulation exercise	Can explain how to simulate the response of a control system by discretizing the model of the control target and the control device.
		15th	Review	Review the content of classes in the second half of the semester.
		16th	Final exam	

Evaluation Method and Weight (%)

	Examination	Exercise	Total
Subtotal	80	20	100
Basic Proficiency	0	0	0
Specialized Proficiency	80	20	100
Cross Area Proficiency	0	0	0

Akashi College		Year	2021		Course Title	Engineering of Energy Conversion

Course Information

Course Code	0053		Course Category	Specialized / Elective
Class Format	Lecture		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	First Semester		Classes per Week	2
Textbook and/or Teaching Materials				
Instructor	FUJII Haruhisa			

Course Objectives

The aim of this course is to develop the following capacities.
1. The ability to understand the positioning of electrical energy in particular among various energies, and its relationship with nature, society and the environment, and consider them.
2. The ability to understand the basic mechanisms and equipment of various power generation methods and substations, and explain them to others.
3. The ability to understand new methods of power generation and power storage in addition to existing methods of power generation, recognize the effects of technology on nature and society, and explain them to others.
4. The ability to think of the optimal combination as a power supply systems based on a thorough understanding of the above topics.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Fully understand the positioning of electrical energy in particular among various energies, and its relationship with nature, society and the environment, and can fully consider them.	Understand the positioning of electrical energy in particular among various energies, and its relationship with nature, society and the environment, and can consider them.	Do not understand the positioning of electrical energy in particular among various energies, and its relationship with nature, society and the environment, and cannot consider them.
Achievement 2	Understand the basic mechanisms and equipment of various power generation methods and substations, and can accurately explain them to others .	Understand the basic mechanisms and equipment of various power generation methods and substations, and can explain them to others.	Do not understand the basic mechanisms and equipment of various power generation methods and substations.
Achievement 3	Understand new power generation methods and power storage, in addition to existing power generation methods, and recognize the effects of technology on nature and society, and can accurately explain them to others.	Understand new power generation methods and methods for power storage, in addition to the existing power generation methods, and recognize the effects of technology on nature and society , and can explain them to others.	Do not understand new power generation methods and methods for power storage, in addition to the existing power generation methods, or recognize the effects of technology on nature and society.
	Thoroughly understand evaluation items 1 to 3, and can think specifically of the optimal combination as a power supply systems.	Thoroughly understand evaluation items 1 to 3, and can think of the optimal combination as a power supply systems.	Do not thoroughly understand the evaluation items 1 to 3, and cannot think of the optimal combination as a power supply system.

Assigned Department Objectives

学習・教育到達度目標 (C) 学習・教育到達度目標 (D) 学習・教育到達度目標 (H)

Teaching Method

Outline	The course will cover the basic issues of power generation systems and equipment, such as hydroelectric, thermal, and nuclear power. Furthermore, students will also understand clean new power generation technologies and systems such as solar energy, wind power, and fuel cells.
Style	Classes will be conducted in a lecture style, in line with the textbook. Liaison: Nakai Yuichi
Notice	In order to understand this course, it's important to review the basics of physics and chemistry. This is also an important course for acquiring an electrician license. Students who miss 1/3 or more of classes will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	An overview of electrical energy and energy conversion engineering	Can explain the position of electrical energy in modern society, its relationship with environmental problems, and the conversion of various types of energy into electrical energy.
		2nd	Overview of hydroelectric power generation	Can explain the power generation methods and hydrodynamics of hydroelectric power plants, and the basics of hydroelectric power plants.
		3rd	Hydropower facilities, pumping power	Understand the various main hydroelectric plants and their functions, and can explain an outline of the hydroelectric power plant.

		4th	Waterwheel and attached equipment, turbine generators and electrical equipment	Systematically understand the types of water vehicles, their characteristics, and their mechanisms to generate electricity. Can compare and explain the characteristics of various types of water vehicles in terms of efficiency and specific speed. Can also explain the mechanisms and functions of speed regulators and excitation devices.
		5th	Overview of thermal power generation	Understand the thermodynamics necessary to understand the mechanisms of thermal and nuclear power generation, and can explain the mechanisms of steam power generation among thermal power generation.
		6th	Steam power generation	Can explain the functions and structure of steam turbines, generators, water pumps, condensers, and boilers, which are the main facilities of the Guangzhou Automobile Power Plant.
		7th	Gas turbine power generation and combined cycle power generation	Understand the mechanisms of gas turbine power generation and combined cycle power generation among thermal power plants, and can explain environmental measures at thermal power plants.
		8th	Midterm exam	
	2nd Quarter	9th	Overview of nuclear power generation	Can explain the system of reactors and the components of commercial power reactors (pressurized water reactors, boiling water reactors).
		10th	Basics of nuclear reactions	Can explain the energy of nuclear and fission reactions, which are the basis of nuclear power generation.
		11th	Safety design and nuclear fuel cycle for nuclear power generation	Can explain the safety design of light-water reactors and outline the nuclear fuel cycle.
		12th	Solar energy generation	Can explain the principles, features, and challenges of solar and solar thermal power generation systems as a representative renewable energy.
		13th	Wind power	Can explain the principles, characteristics, and challenges of wind power generation.
		14th	Fuel cell power generation	Can explain the principles, types, features, and issues of fuel cells.
		15th	Power storage	Can explain the technologies involved in power storage using secondary batteries and superconductivity.
		16th	Final exam	

Evaluation Method and Weight (%)

	Examination	Exercise	Mutual Evaluations between students	Behavior	Portfolio	Total
Subtotal	70	30	0	0	0	100
Basic Proficiency	0	0	0	0	0	0
Specialized Proficiency	70	30	0	0	0	100
Cross Area Proficiency	0	0	0	0	0	0

Akashi College		Year	2021		Course Title	Energy Transmission and Distribution Engineering

Course Information

Course Code	0054	Course Category	Specialized / Elective
Class Format	Lecture	Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course	Student Grade	5th
Term	Second Semester	Classes per Week	2
Textbook and/or Teaching Materials			
Instructor	KONO Yoshiyuki		

Course Objectives

1) Understand the transmission, substation, and distribution mechanisms, equipment, and control systems required for transmitting electrical energy.
2) Understand the analysis methods required for power system control analysis.
3) Understand the ways the electric power system should be in response to changes in the social landscape, such as power liberalization / deregulation and global environmental issues.
4) Understand specific methods for building system controls.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Can handle the transmission, substation, and distribution mechanisms, equipment, and control systems required for transmitting electrical energy in various situations.	Understand the transmissions, substation, and distribution mechanisms, equipment, and control systems required for transmitting electrical energy.	Do not understand the transmissions, substation and distribution mechanisms, equipment, and control systems required for the transmitting electrical energy.
Achievement 2	Can handle the analysis methods required for control analysis of power system control and analysis in various situations.	Understand the analysis methods required for power system control and analysis.	Do not understand the analysis methods required for power system control and analysis.
Achievement 3	Can handle the ways the electric power system should be in response to changes in the social landscape, such as power liberalization / deregulation and global environmental issues in various situation.	Understand the ways the electric power system should be in response to changes in the social landscape, such as power liberalization / deregulation and global environmental issues.	Do not understand the ways the electric power system should be in response to changes in the social landscape, such as power liberalization / deregulation and global environmental issues.
	Can handle specific methods for building system controls in various situations.	Understand the specific methods for building system controls.	Do not understand concrete methods for building system controls.

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達度目標 (F) 学習・教育到達度目標 (H)

Teaching Method

Outline	This course will be held in a lecture style, and taught by a teacher who was engaged in power system analysis, development of operation and planning support systems, and research and development of power devices for power electronics applications (HVDC and FACTS) at Mitsubishi Electric Corporation's electrical system engineering department, leveraging this experience. The aim of the course is to gain knowledge about the structure of the electrical energy supply system and its components, which play a major role in the energy supply system. In addition, students will learn various control methods and control theories related to the stable operation of supply systems. Furthermore, classes will help students recognize and understand the recent issues of power liberalization (such as electricity trading), deregulation (such as microgrids) and global environmental issues.
Style	The classes will mostly consist of lectures with handouts. There will also be exercises and homework to help students understand. In addition, the class will go on a factory tour for weeks 5 and 6 to help deepen their understanding of actual machines. Hosokawa is the liaison.
Notice	A textbook will be used to aid students' understanding, but is not mandatory to buy. The factory tour for weeks 5 and 6 will take place at consecutive times by changing the timetable. Students who miss 1/3 or more of classes will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☑ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Evolution of the electric business and the power system	Have studied the evolution of the electric business and understand the overview of the configuration and operation control of the electric power system that made it a reality. Furthermore, are aware of the situation regarding the liberalization of electric power.
		2nd	Transmission power (1)	Have studied transmission methods and voltage, as well as track constants and transmission characteristics. Also, understand the recent energy supply methods, such as microgrids, as hot topics.
		3rd	Transmission power (2)	Same as above

		4th	Substations (1)	Understand the roles and components of substations and switchboxes, which are important components of the power system.
		5th	Substations (2)	Same as above
		6th	Equipment manufacturing factory	Have visited a power equipment manufacturing factory online or actually to deepen their understanding of the actual machine.
		7th	Power distribution	Understand the voltage of the electrical distribution system and the electrical distribution equipment. Furthermore, understand the types of power in demand and the quality of electricity.
		8th	Midterm exam	Understand the content from weeks 1 to 7.
	4th Quarter	9th	Unit method, protection of the power system	Have mastered the unit method, which is one of the element technologies for the analysis and calculation of power systems. Have mastered the protection and emergency control of the power system.
		10th	Operation and control of the power system	Understand the supply and demand control of power systems (such as supply and demand planning and economic load distribution), and have mastered the frequency and voltage control systems.
		11th	Symmetric coordinates and failure calculations	Understand the failure calculation (symmetric coordinate system), which is one of the analytical calculations of the power system. Are more proficient in fault calculation through learning specific cases and exercises.
		12th	Stability of the power system (1)	Understand the voltage and frequency stability of the power system.
		13th	Stability of the power system (2)	Understand the static and dynamic and transient stability of the power system.
		14th	Power Systems and the Environment	Have deepened their understanding on the classification of environmental problems in electric power systems, environmental problems caused by electromagnetic fields, and the global environment.
		15th	Next generation of power systems	Understand the challenges and countermeasures of the next generation electric power system (smart grid), which should respond to the increase in electric vehicles and new energy.
		16th	Final exam	Understand the content from weeks 9 to 15.

Evaluation Method and Weight (%)

	Examination	Report	Exercise	Total
Subtotal	60	20	20	100
Basic Proficiency	0	0	0	0
Specialized Proficiency	60	20	20	100
Cross Area Proficiency	0	0	0	0

	Akashi College		Year	2021		Course Title	Application of Electronics

Course Information

Course Code	0055		Course Category	Specialized / Elective
Class Format	Lecture		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	First Semester		Classes per Week	2
Textbook and/or Teaching Materials	教科書は指定しない。適宜、講義資料を配布する。			
Instructor	INOUE Kazunari			

Course Objectives

（1）代表的な臨床検査（検体検査）の種類と検査目的・意義を理解する。
（2）血液細胞分析方法、特にフローサイトメータの測定原理・特徴を理解する。
（3）凝固、生化学、免疫検査等に使用される測定原理および分光学的な検出技術の特徴を理解する。
（4）代表的な臨床検査装置システムおよび構成要素技術に付いて理解する。

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目1	代表的な臨床検査（検体検査）の種類と検査目的・意義を正確に理解できる。	代表的な臨床検査（検体検査）の種類と検査目的・意義を理解できる。	代表的な臨床検査（検体検査）の種類と検査目的・意義が理解できない。
評価項目2	血液細胞分析方法、特にフローサイトメータの測定原理・特徴を正確に理解できる。	血液細胞分析方法、特にフローサイトメータの測定原理・特徴を理解できる。	血液細胞分析方法、特にフローサイトメータの測定原理・特徴が理解できない。
評価項目3	凝固、生化学、免疫検査等に使用される測定原理および分光学的な検出技術の特徴を正確に理解できる。	凝固、生化学、免疫検査等に使用される測定原理および分光学的な検出技術の特徴を理解できる。	凝固、生化学、免疫検査等に使用される測定原理および分光学的な検出技術の特徴が理解できない。
評価項目4	代表的な臨床検査装置システムおよび構成要素技術に付いて正確に理解できる。	代表的な臨床検査装置システムおよび構成要素技術に付いて理解できる。	代表的な臨床検査装置システムおよび構成要素技術に付いて理解できない。

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達度目標 (H)

Teaching Method

Outline	臨床検査は現在の医療における診断や治療に不可欠なものであり、現代医療の進展に伴い技術革新や更なる展開が進んでいる。本講義では、血液や尿等を分析対象とする検体検査に関してその概要およびその検査に応用されている計測技術等の基礎に付いて解説する。また、生化学的測定、免疫学的測定、遺伝子学的測定等の各分野の測定における基本原理とそれに用いられている光学、電子、流体等や化学、分子生物学の技術並びに測定装置に付いて解説する。また、本講義を通して病気や健康管理についての知識を深める。
Style	遺伝子検査やバイオインフォーマティクスなどを理解することを目標とし、第１週から第１５週まで講義形式で授業を行う。 連絡員：井上 一成
Notice	生物学の知識がある方が望ましい。 合格の対象としない欠席条件(割合) 1/3以上の欠課

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	臨床検査概論（1）	健康管理、診断、治療における検査の役割や種類等、臨床検査全体の概要に付いて理解できる。検査結果の解釈の仕方や精度管理等について理解できる。
		2nd	臨床検査概論（2）	同上
		3rd	生化学検査（1）	生化学検査における項目の意義や検査方法等、生化学検査技術の概要を理解できる。生化学検査装置の概要とそれに応用されている、測定原理、分光学的技術等を理解できる。
		4th	生化学検査（2）	同上
		5th	血液学検査（1）	血液細胞に関する検査技術および、血液凝固検査技術の概要を理解できる。赤血球や白血球などの細胞分析に使用されているフローサイトメータに応用されている流体力学、工学技術等を理解できる。
		6th	血液学検査（2）	同上
		7th	一般検査（尿、便）	尿の定性検査、尿沈渣検査技術の概要およびその測定機器を理解できる。また、便潜血検査の概要を理解できる。
		8th	中間試験	
	2nd Quarter	9th	企業見学	臨床検査機器・試薬を開発、生産している企業を見学し、実際の検査装置や臨床検査に関わる企業活動を知ることで、臨床検査に関する理解を深めることができる。

		10th	免疫学的検査（１）	免疫学的検査技術の概要を理解できる。 化学発光免疫測定装置等の概要とそれに応用されている測定原理、検出技術等を理解できる。
		11th	免疫学的検査（２）	同上
		12th	遺伝子検査（１）	遺伝子検査技術の概要を理解できる。 PCR装置やシークエンサー等の遺伝子検査装置の概要とそれに応用されている測定原理、検出技術を理解できる。
		13th	遺伝子検査（２）	同上
		14th	微生物検学検査	微生物学検査技術の概要を理解できる。 微生物学検査に使用されている検査装置の概要とそれに応用されている測定原理、検出技術を理解できる。
		15th	臨床検査のトピックス	臨床検査における、最近の話題を理解できる。 これまでの講義の振り返りによる総復習を行える。
		16th	期末試験	期末試験

Evaluation Method and Weight (%)

	試験	発表	Total
Subtotal	80	20	100
基礎的能力	0	0	0
専門的能力	80	20	100
分野横断的能力	0	0	0

Akashi College		Year	2021		Course Title	Image Engineering

Course Information

Course Code	0056		Course Category	Specialized / Elective
Class Format	Lecture		Credits	Academic Credit: 2
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	Second Semester		Classes per Week	2
Textbook and/or Teaching Materials				
Instructor	NAKAI Yuichi			

Course Objectives

(1) Understand the scope and examples of applications of image encoding technology.
(2) Understand the nature of image information and understand why image encoding technology is needed.
(3) Understand the outline and characteristics of various types of image encoding.
(4) Understand the practical use of basic image processing and image encoding technologies.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Can fully explain the scope and examples of applications of image encoding technologies.	Can explain the scope and examples of applications of image encoding technologies.	Cannot explain the scope and examples of applications of image encoding technologies.
Achievement 2	Understand the nature of image information and can accurately explain why image encoding technologies are needed .	Understand the nature of image information and can explain why image encoding technologies are needed.	Cannot explain the nature of image information and why image encoding technologies are needed.
Achievement 3	Can specifically explain the outline and characteristics of various types of image encoding.	Can explain the outline and characteristics of various types of image encoding.	Cannot explain the outline and characteristics of various types of image encoding.
	Can accurately explain the practical use of basic image processing and image encoding technologies	Can explain the practical use of basic image processing and image encoding technologies.	Cannot explain the practical use of basic image processing and image encoding technologies.

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達目標 (H)

Teaching Method

Outline	When handling images as digital information, technologies for reducing their data volume (image encoding or image compression) are a must. In this lecture, we will be explaining the nature of the image information briefly, and then giving lectures on various image encoding technologies. In addition, we will ensure the knowledge learned in the lecture by doing exercise assignments using matrix computing software, etc.
Style	Slides will be mainly used to explain the content in class. Also, since this is a learning-credit subject, there will be three to four assignments over the course of half a semester. Assignments will be about creating programs that perform specified processes, so we will explain the application students can used for the assignments in advance.
Notice	This course's content will amount to 90 hours of study in total. These hours include the learning time guaranteed in classes and the standard self-study time required for pre-study / review, and completing assignment reports. As this is a learning-credit subject, there will be three to four assignments over the course of half a semester. All assignments must be submitted to earn the credits. Since the assignments involve programming, it's desirable to have experiences in programming (in any language). Students who miss 1/3 or more of classes will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	The nature of image information	Digitized image information is generally said to have stronger image correlation. Can explain what image correlation is and what happens when image correlation is stronger.
		2nd	Image manipulation by Python (1)	Understand how to use Python to accomplish the assignments.
		3rd	Image manipulation by Python (2)	Can use Python to do the processing given as an assignment.
		4th	Entropy encoding (1)	Can explain the concept of entropy encoding, which is often used together with various types of encoding.
		5th	Entropy encoding (2)	Can briefly explain Huffman and arithmetic encodings as typical techniques for entropy encoding.
		6th	Predictive encoding (1)	Can explain the principle of predictive encoding, the simplest of image encoding.
		7th	Predictive encoding (2)	Can explain the characteristics of predictive encoding, and can explain how to compensate for the shortcomings.
		8th	Midterm exam	

		9th	Transform encoding (1)	Can explain the concept of transform encoding, and can explain the two-dimensional discrete cosine transform (DCT), which is the mainstream of image encoding today.
4th Quarter		10th	Transform encoding (2)	Can explain JPEG, which is an image coding method based on DCT.
		11th	Wavelet transformation	Can briefly explain the wavelet transform, which is gaining attention as the next-generation method of transform encoding.
		12th	Vector quantization (1)	Can explain the overview of vector quantization, an extension of scalar quantization.
		13th	Vector quantization (2)	Can explain the performance, design techniques and challenges of vector quantization.
		14th	Other image encoding	Can explain outline of other image encoding methods such as block truncation encoding, progressive encoding, etc.
		15th	Video encoding	Can explain various video encoding methods briefly.
		16th	Final exam	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Exercise	Other	Total
Subtotal	70	0	0	0	30	0	100
Basic Proficiency	0	0	0	0	0	0	0
Specialized Proficiency	70	0	0	0	30	0	100
Cross Area Proficiency	0	0	0	0	0	0	0

Akashi College		Year	2021		Course Title	Computer Simulation

Course Information

Course Code	0057		Course Category	Specialized / Elective
Class Format	Lecture		Credits	Academic Credit: 2
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	Second Semester		Classes per Week	2
Textbook and/or Teaching Materials				
Instructor	KAMI Yasushi			

Course Objectives

1. Can explain the reason why numerical calculations yield errors.
2. Can describe a solution method (algorithm) on basic math problems.
3. Can explain how to simulate different phenomena on a computer, starting from how to create a model.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Can explain the method so as to avoid major errors on numerical calculations	Can explain causes why major errors on numerical calculations occur.	Cannot explain the reasons why major errors on numerical calculations occur.
Achievement 2	Can accurately explain a solution method (algorithm) for all specified problems.	Can explain an overview of the methods (algorithms) for finding solutions to some problems.	Cannot explain the method (algorithm) of finding solutions to problems.
Achievement 3	Can program a method to find a solution (near real-time solution) for all specified problems	Can program a method to find solutions (near real-time solutions) for some problems.	Cannot program a method to find a solution to problems.

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達度目標 (H)

Teaching Method

Outline	A simulation is the imitation of a phenomenon by reducing it into a model. The aim of this course is to conduct computer-based experiments on simple models of natural and social phenomena that are difficult to reproduce and observe, to identify the characteristics of the phenomenon and to deepen the understanding of the contents. In classes, we will introduce the basic concepts and the latest examples of modeling and simulation in the first half, and practice the methods to solve their own challenges by programming and explaining a simulator in the second half.
Style	Classes are conducted through lectures and exercises. Lectures will be conducted through handouts. In addition to what students learned in classes, they will perform individual activities on assignments of their choosing. Exercises are supposed to build a system to help students in their own graduation research. Students will be evaluated on assignment progress and the work produced during the exercises, and presentations.
Notice	This course's content will amount to 90 hours of study in total. These hours include the learning time guaranteed in classes and the standard self-study time required for pre-study / review, and completing assignment reports. As this course is built on the content of Data Structures and Algorithms, Computer Programming, and Probability and Statistics, it's recommended that students review these textbooks, materials, etc. as references during the classes. Students who miss 1/3 or more of classes will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Algorithms, calculations and recurrence relations	Understand time and space complexity of algorithms. Can derive (time) complexity of some algorithms. Can derive recurrence relations which give solutions of problems.
		2nd	Repetitive methods, errors, loss of significance, data loss	Can derive repetitive methods which give solutions of problems. Can explain the cause of phenomena that occurs in numerical calculations, such as truncation errors, loss of significance, data loss
		3rd	Nonlinear equations	Can explain the Newton method, the bisection method ,and false position method .
		4th	Simultaneous equations 1	Can explain algorithms of Gaussian elimination and sweep out methods.
		5th	Simultaneous equations 2	can explain algorithms of Jacobi, Gauss-Seidel and SOR method.
		6th	Exercise	Exercise on the contents of classes in the first half of the semester.
		7th	Review	Review the contents of classes in the first half of the semester.

		8th	Midterm exam	
	4th Quarter	9th	Eigenvalue	Can explain algorithms of Jacobi and the power methods for obtaining eigenvalues of matrices.
		10th	Interpolation of functions	Can explain linear interpolation, Newton forward linear interpolation and lagrange linear interpolation.
		11th	Method of least squares	Can explain the method of least squares.
		12th	Numerical differentials	Can calculate first and second order numerical differentials with forward, central and backward formulas. Can calculate first order numerical differential with laglange interpolation.
		13th	Numerical integrals	Can calculate numerical integrals with rectangle, trapezoidal and Simpson's rule.
		14th	Initial value problem and Boundary value problem of ordinary differential equations	Can explain algorithms of Euler, Heun's and Runge–Kutta method for the Initial value problem. Can explain an algorithm of finite-dfference method for the boundary value problem.
		15th	Review	Review the content of classes in the second half of the semester.
		16th	Final exam	

Evaluation Method and Weight (%)

	Examination	Exercise	Total
Subtotal	80	20	100
Basic Proficiency	0	0	0
Specialized Proficiency	80	20	100
Cross Area Proficiency	0	0	0

Akashi College		Year	2021		Course Title	Qualifications in Electric and Electronic Engineering I

Course Information

Course Code	0058		Course Category	Specialized / Elective
Class Format	その他		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	Year-round		Classes per Week	1
Textbook and/or Teaching Materials	なし			
Instructor	OHMUKAI Masato			

Course Objectives

電気電子工学に関わる内容の外部団体による資格試験に合格することを目標とする。
該当する資格に関しては担当教員が単位認定の審査にあたるので、単位取得を希望するものは事前に相談しておくこと。

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目1	電気主任技術者第３種または，工事担任者AI・DD総合種に余裕をもって合格できる.	電気主任技術者第３種または，工事担任者AI・DD総合種に合格できる.	電気主任技術者第３種または，工事担任者AI・DD総合種に合格できない.
評価項目2			
評価項目3			

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達度目標 (F) 学習・教育到達度目標 (H)

Teaching Method

Outline	電気電子工学分野の学習の成果として、外部団体主催の資格試験の結果に準じて単位を与える科目と位置づける。指定の外部資格試験のいずれかに合格した場合、学生課教務担当が指定する期日までに所定の手続きを完了すれば、1単位を与える。
Style	授業は行わない。
Notice	単位認定には合格証書または合格証明書等の証明書類が必要で、申請期間は冬休み以降で教務係が指定した期日までとする。この期間内に証明書類を提出できない場合には単位が認定されない。期限を厳守すること。 合格の対象としない欠席条件(割合) 条件なし

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	自主学習 資格試験に対する自主的な学習(講義は行わない)	自主的に学習を進めることができる.
		2nd	同上 同上	自主的に学習を進めることができる.
		3rd	同上 同上	自主的に学習を進めることができる.
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		7th	同上 同上	自主的に学習を進めることができる.
		8th	中間試験実施せず	
	2nd Quarter	9th	同上 同上	自主的に学習を進めることができる.
		10th	同上 同上	自主的に学習を進めることができる.
		11th	同上 同上	自主的に学習を進めることができる.
		12th	同上 同上	自主的に学習を進めることができる.
		13th	同上 同上	自主的に学習を進めることができる.
		14th	同上 同上	自主的に学習を進めることができる.
		15th	同上 同上	自主的に学習を進めることができる.
		16th	期末試験実施せず	
2nd Semester	3rd Quarter	1st	同上 同上	自主的に学習を進めることができる.

		2nd	同上 同上	自主的に学習を進めることができる.
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		16th	期末試験実施せず	

Evaluation Method and Weight (%)

	試験	発表	相互評価	態度	ポートフォリオ	その他	Total
Subtotal	0	0	0	0	0	100	100
基礎的能力	0	0	0	0	0	0	0
専門的能力	0	0	0	0	0	100	100
分野横断的能力	0	0	0	0	0	0	0

Akashi College		Year	2021		Course Title	Qualifications in Electric and Electronic Engineering II

Course Information

Course Code	0059		Course Category	Specialized / Elective
Class Format	その他		Credits	School Credit: 1
Department	Electrical and Computer Engineering Electrical Engineering Course		Student Grade	5th
Term	Year-round		Classes per Week	1
Textbook and/or Teaching Materials	なし			
Instructor	OHMUKAI Masato			

Course Objectives

電気電子工学に関わる内容の外部団体による資格試験に合格することを目標とする。
該当する資格に関しては担当教員が単位認定の審査にあたるので、単位取得を希望するものは事前に相談しておくこと。

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目1	電気主任技術者第１種または，第２種試験に余裕をもって合格できる.	電気主任技術者第１種または，第２種試験に合格できる.	電気主任技術者第１種または，第２種試験に合格できない.
評価項目2			
評価項目3			

Assigned Department Objectives

学習・教育到達度目標 (D) 学習・教育到達度目標 (F) 学習・教育到達度目標 (H)

Teaching Method

Outline	電気電子工学分野の学習の成果として、外部団体主催の資格試験の結果に準じて単位を与える科目と位置づける。指定の外部資格試験のいずれかに合格した場合、学生課教務担当が指定する期日までに所定の手続きを完了すれば、1単位を与える。
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