Tsuyama College	Advanced Electronics and Information System Engineering Course	Year	2023

Department Goals

Course Category		Course Title	Course Code	Credit Type	Credits	Class Hours per Week								Instructor	Division in Learning
						Adv. 1st Y				Adv. 2nd Y					
						1st		2nd		1st		2nd			
						1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q		
General	Elective	Biotechnology	0006	Academic Credit	2	2								SHIBATA Norito	Elective subjects
General	Elective	Practical English Ⅰ	0009	Academic Credit	2			2						YAMAGUCHI Yumi	Elective subjects
General	Elective	Theory of International Culture	0010	Academic Credit	2	2								WATANABE Tomomi	Elective subjects
Specialized	Elective	Methods of Scientific Experiments	0001	Academic Credit	2	2								YAMAGUCHI Daizo, KAWAI Masahiro	Elective subjects
Specialized	Elective	Technical English Reading	0002	Academic Credit	2	2								KATORI Shigetaka	Elective subjects
Specialized	Elective	General Aspects of Engineering Ⅰ	0003	Academic Credit	2	Intensive								TERAMOTO Takayuki	Elective subjects
Specialized	Elective	General Aspects of Engineering Ⅱ	0004	Academic Credit	2	Intensive								TERAMOTO Takayuki	Elective subjects

Specialized	Compulsory	Thesis Work Ⅰ	0005	School Credit	8	8	8					TERAMOTO Takayuki,KATORI Shigetaka,NISHIO Kimihiro,OKE Shinichiro,YAMAMOTO Tsunayuki,NAKAMURA Naoto,YABUKI Noboru,TAKETANI Hisashi,ONISHI Atsushi,KAWANAMI Hiromichi,SORI Hitoshi	Required subjects
Specialized	Elective	Advanced Electromagnetism	0007	Academic Credit	2	2						NAKAMURA Naoto,UETSUKI Tadao	Elective subjects
Specialized	Elective	Electric and Electronic Apparatus	0008	Academic Credit	2			2				YAGI Hideyuki	Elective subjects
Specialized	Elective	Information Science	0011	Academic Credit	2			2				TERAMOTO Takayuki	Elective subjects
Specialized	Elective	Basic Practice in Information Processing Ⅰ	0012	School Credit	1	2						TAKETANI Hisashi	Elective Subjects
Specialized	Elective	Practice in Information Processing Ⅰ	0013	School Credit	1	2						TERAMOTO Takayuki	Elective Subjects
Specialized	Elective	Basic Practice in Information Processing Ⅱ	0014	School Credit	1			2				TAKETANI Hisashi	Elective subjects
Specialized	Elective	Practice in Information Processing Ⅱ	0015	School Credit	1			2				TERAMOTO Takayuki	Elective Subjects
Specialized	Elective	Computer System Engineering	0016	Academic Credit	2			2				MIYASHITA Takuya	Elective subjects
Specialized	Elective	Special Lecture on Information Systems	0017	Academic Credit	2	2						ONISHI Atsushi	Elective subjects

Specialized	Elective	Linear Algebra	0018	Academic Credit	2	2							MATSUDA Osamu	Elective subjects
Specialized	Elective	Environmental Science Theory	0019	Academic Credit	2			2					YAMADA Takafumi	Elective subjects
Specialized	Elective	Engineering Ethics	0020	Academic Credit	2	2							HOSOTANI Kazunori,MIYASHITA Takuya	Elective subjects
Specialized	Compulsory	Experiments of Electronic and Computer Systems	0021	School Credit	4	4	4						NAKAMURA Shigeyuki,ONISHI Atsushi,SORI Hitoshi	Required subjects
General	Elective	Practical English Ⅱ	0029	Academic Credit	2					2			YAMAGUCHI Yumi	Elective subjects
General	Elective	Social Sciences	0030	Academic Credit	2							2	KADOYA Hidenori	Elective subjects
General	Elective	Modern Philosophy	0031	Academic Credit	2							2	KAMIYA Ken	Elective Subject
Specialized	Elective	Special Lecture on Advanced Engineering	0022	Academic Credit	1					Intensive			KONISHI Daijiro,SAEKI Fumihiro,TERAMOTO Takayuki	Elective subjects
Specialized	Elective	Production Control Engineering	0023	Academic Credit	2							2	KOBAYASHI Toshiro	Elective subjects
Specialized	Elective	Practice on Regional Cooperation	0024	Academic Credit	1					Intensive			SAEKI Fumihiro,TERAMOTO Takayuki	Elective subjects

Specialized	Compulsory	Thesis Work Ⅱ	0025	School Credit	8					8	8						TERAMOTO Takayuki,NAKAMURA Shigeyuki,KATORI Shigetaka,NISHIO Kimihiro,OKE Shinichiro,SHIMADA Takao,YAMAMOTO Tsunayuki,SORI Hitoshi,MORI Yoshiya	Required subjects
Specialized	Elective	Electrical Network Analysis	0026	Academic Credit	2					2							NISHIO Kimihiro	Elective subjects
Specialized	Elective	Electronic Device Engineering	0027	Academic Credit	2					2							NAKAMURA Shigeyuki	Elective subjects
Specialized	Elective	Power Electronics	0028	Academic Credit	2					2							KOBAYASHI Toshiro	Elective subjects
Specialized	Elective	Practice in Information System Ⅰ	0032	School Credit	1					2							KAWANAMI Hiromichi,KAWAI Masahiro	Elective subjects
Specialized	Elective	Practice in Information System Ⅱ	0033	School Credit	1							2					KAWANAMI Hiromichi,KAWAI Masahiro	Elective subjects
Specialized	Elective	Numerical Analysis	0034	Academic Credit	2					2							ONISHI Atsushi	Elective subjects
Specialized	Elective	Image Processing	0035	Academic Credit	2					2							YABUKI Noboru	Elective Subjects
Specialized	Elective	Special Lecture on Digital Signal Processing	0036	Academic Credit	2							2					KAWANAMI Hiromichi	Elective subjects
Specialized	Elective	Industrial Mathematics	0037	Academic Credit	2					2							YOKOTANI Masaaki	Elective subjects

Specialized	Elective	Scientific Investigation	0038	Academic Credit	2	2	YAMAGUCHI Daizo	Elective subjects
Specialized	Elective	System Control Engineering	0039	Academic Credit	2	2	YAGI Hideyuki	Elective subjects
Specialized	Elective	Long Term Internship	0040	Academic Credit	2	Intensive	SAEKI Fumihiro,TERAMOTO Takayuki,KONISHI Daijiro	Elective subjects
Specialized	Elective	Practice on International Communication	0041	Academic Credit	1	Intensive	SAEKI Fumihiro,TERAMOTO Takayuki,KONISHI Daijiro	Elective subjects

Tsuyama College	Year	2023	Course Title	Biotechnology

Course Information

Course Code	0006	Course Category	General / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 1st
Term	First Semester	Classes per Week	2
Textbook and/or Teaching Materials	Textbook: Do not specify, and distribute reference materials in a timely manner during class. Reference book: Kodansha "Biotechnology Text Series Genetic Engineering" Jikkyo Shuppan "Basic Series for Life Sciences Advanced Technology and Ethics"		
Instructor	SHIBATA Norito		

Course Objectives

Learning purpose : Understand intelligent mechanics based on biological knowledge by learning the principles, techniques and applications of genetic engineering, tissue engineering and biomimetics. Also, understand bioengineering based on natural science through this lecture.

Course Objectives :
1. Understand the principles and applications of genetic engineering technology.
2. Understand tissue engineering using ES cells and iPS cells.
3. Understand biomimetics using the characteristics of living organisms from a mechanical point of view.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	Understanding and explain genetic engineering technology using nucleic acids, and how it can be useful in daily life.	Explain genetic engineering technology using nucleic acids.	Understand genetic engineering technology using nucleic acids.	Not reached
Achievement 2	Understand and explain application examples of tissue engineering using iPS cells and ES cells.	Explain application examples of tissue engineering using iPS cells and ES cells Wear.	Understand tissue engineering using iPS cells and ES cells.	Not reached
Achievement 3	Understanding and explain application examples of biomimetics that take advantage of the characteristics of living organisms and their principles.	Explain the application example of biomimetics that makes the best use of the characteristics of living things.	Understand the principles of biomimetics that take advantage of the characteristics of living organisms.	Not reached

Assigned Department Objectives

Teaching Method

Outline	General or Specialized : Specialized Field of learning : Biotechnology/Biomimetics/Tissue engineering Foundational academic disciplines : Biology/Biological Science Relationship with Educational Objectives : This class is equivalent to "(1) Cultivate human creative talent, rich in practical abilities". Relationship with JABEE programs : The main goals of learning / education in this class is "(A) ..., A-1. Course outline : Bioengineering has expanded not only to the fields of life science such as biology, medicine and agriculture, but also to bioengineering based on mechanical engineering. The core technologies are genetic engineering, tissue engineering and biomimetics. In this lecture, we will systematically explain from the basic explanation of these to the applied technology.
Style	Course method : I will explain the main points while explaining on the board etc. based on the handouts. Timely, report assignments will be given according to the content of the lesson, and review and self-study will be encouraged. This course is a second-half course. Grade evaluation method : The score of the final exam (70%) is evaluated by adding the reports up to each regular exam (30%). No retest will be conducted. No retaking exam will be given. However, for students who score less than 60 points , a report will be given with advance instructions if attendance and class attitude are good. The result of the report will be read as the result of the regular exam, with a maximum final grade of 60 points.

Notice	Precautions on the enrollment : This is a class that requires study outside of class hours. A total of 45 hours of study is required per credit, including both class time and study outside class time. Follow the instructions of the instructor regarding study outside of class hours. Course advice : I will explain from the basics so that you can understand even if you do not have basic knowledge of biology, so if you are interested in it, please take it. This class is a subject that is a development of Applied Biology learned in the 5th year of main course. Foundational subjects : Biology (1st year), Chemistry I (2nd year), Chemistry II (3rd year), Applied Biology (4th year) Related subjects : Applied Chemistry (4th year) Attendance advice : Strictly adhere to the deadline for report assignments. Treat as absent when half of the class time has passed. If you have any questions about the lecture or anything related to it, please actively ask questions and deepen your understanding.

Characteristics of Class / Division in Learning

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

Elective subjects

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance	Understand the benefits of applying organisms to technological development
		2nd	Genetic engineering I	Understand the mechanism of DNA amplification by the PCR method, and further understand the role of each part of the actual PCR machine.
		3rd	Genetic engineering II	Understand the method of measuring the amount of DNA by real-time PCR using the PCR method and the principle and mechanism of the sequencing device that determines the base sequence based on the PCR method.
		4th	Genetic engineering III	Understand principle and mechanism of DNA typing method using PCR method
		5th	Genetic engineering IV	Understand the principles of genetic recombination in animals and plants
		6th	Genetic engineering V	Understand the potential application of genetic recombination in animals and plants to industry from actual examples
		7th	Tissue engineering I	Understand ES cells and iPS cells, which are the basis of tissue engineering, and understand their production methods in terms of cell engineering.
		8th	Tissue engineering II	Understand the bioactive substances required for tissue engineering using iPS cells and ES cells
	2nd Quarter	9th	Tissue engineering III	Understanding the scaffolding materials used in tissue engineering from a materials engineering perspective
		10th	Tissue engineering IV	Considering the possibility of tissue engineering from the aspects of cell engineering and medical engineering based on actual examples of tissue regeneration using iPS cells and ES cells
		11th	Biomimetics I	Understand the overall picture of biomimetics that applies and utilizes the characteristics of living organisms
		12th	Biomimetics II	Mechanically understand the adhesive tape developed from the hands of cockleburs and geckos
		13th	Biomimetics III	Optically and mechanically understand the optical fibers developed from the scales of Morpho butterflies and the swimsuit developed by imitating shark skin
		14th	Biomimetics IV	Understand the mechanical advantages of the Shinkansen, which uses the honeycomb structure found in honeycomb structures, cushions and walls, and the shape of the kingfisher's beak
		15th	(Late term exam)	
		16th	Return of the late term exam and explanation of the answer	

Evaluation Method and Weight (%)

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

Cross Area Proficiency	0	0	0	0	0	0	0

Tsuyama College	Year	2023	Course Title	Practical English I

Course Information

Course Code	0009	Course Category	General / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 1st
Term	Second Semester	Classes per Week	2
Textbook and/or Teaching Materials	Integrity Beginner (Kinsei-do); Successful Keys to the TOEIC Listening and ReadingTest GOAL 500 1 (Kirihara) Other prints. Be sure to bring a dictionary and a laptop.		
Instructor	YAMAGUCHI Yumi		

Course Objectives

Learning purposes: To develop the four skills (listening, reading, writing and speaking) in a balanced manner.

Course Objective: To develop a balance of the four skills (listening, reading, writing and speaking).
1. To try to communicate in English, and be able to understand and communicate specific information and ideas.
2. To read English sentences aloud with correct punctuation and intonation.
3. To summarize the gist of the text in English.
4. To convey one's ideas orally in paired work and presentations.
◎5. To listen to the opinions of others in Japanese and English, and be able to use effective explanatory methods and means to convey one's own opinions and facilitate communication.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	To be thoroughly able to understand and communicate specific information and ideas with an attitude of willingness to communicate in English.	To be almost able to understand and communicate specific information and ideas with an attitude of willingness to communicate in English.	To be at least able to understand and communicate specific information and ideas with an attitude of willingness to communicate in English.	Not to be able to understand and communicate specific information and ideas with an attitude of willingness to communicate in English.
Achievement 2	To be thoroughly able to read aloud English texts with correct punctuation and intonation	To be almost able to read aloud English texts with correct punctuation and intonation	To be at least able to read aloud English texts with correct punctuation and intonation	Not too be able to read aloud English texts with correct punctuation and intonation
Achievement 3	To be thoroughly able to summarize the gist of the text in English.	To be almost able to summarize the gist of the text in English.	To be at least able to summarize the gist of the text in English.	Not to be able to summarize the gist of the text in English.
Achievement 4	To be thoroughly able to communicate in pair work and presentations.	To be almost able to communicate in pair work and presentations.	To be at least able to communicate in pair work and presentations.	Not to be able to communicate in pair work and presentations.
Achievement 5	To be thoroughly able to listen to the opinions of others in Japanese and English, and to use effective explanatory methods and techniques to convey one's own opinions and facilitate communication	To be almost able to listen to the opinions of others in Japanese and English, and to use effective explanatory methods and techniques to convey one's own opinions and facilitate communication	To be at least able to listen to the opinions of others in Japanese and Englishge, and to use effective explanatory methods and techniques to convey one's own opinions and facilitate communication	Not to able to listen to the opinions of others in Japanese and English, and not to use effective explanatory methods and techniques to convey one's own opinions and facilitate communication

Assigned Department Objectives

Teaching Method

Outline	General / Specialty: General Areas of study: Foreign languages Basic disciplines: English, English and American literature, linguistics, phonetics Relationship with Advanced Course learning goals: This course aims to learn from the advanced course "(1) . Relationship with engineer education program: The main goals of learning / education in this class is "(B)". Class outline: Students will be able to make presentations in English while learning expressions and techniques that are frequently used in presentations, and also prepare for the TOEIC test.
Style	Class method: To be able to express what you want to say in English by using the expressions studied in the class. At the same time, we will use the TOEIC textbook to prepare for taking the TOEIC test. Grade evaluation method: Weekly oral presentations 25%, assignment submission 25%, two quizzes 50%.
Notice	Precautions for taking this course: This course is a "course that requires study outside of class hours". A total of 45 hours of study is required per credit, including the class hours and study outside of class hours. For study outside of class hours, follow the instructions from the instructor. Course advice: Actively participate in classes and submit assignments within the deadline. Given the current situation in which TOEIC is widely accepted as a means of judging English proficiency, have a positive attitude towards taking the TOEIC test. Basic subjects: English IV (4th), English V (5) Related subjects: Technical English reading (Specialty 1) Attendance advice: Admission after the start of class is considered to be late, and one credit hour will be counted as absent for two late arrivals.

Characteristics of Class / Division in Learning

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

Elective subjects

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Guidance (Explanations on study methods such as preparation, review, etc., and precautions on taking the course)	Gain an understanding of the goals and content of this course.
		2nd	Integrity Beginner Unit 1 / TOEIC Preparation	Able to understand English grammar.
		3rd	Integrity Beginner Unit 1 / TOEIC Preparation	Able to understand English sentences that include the progressive tense.
		4th	Integrity Beginner Unit 1 / TOEIC Preparation	Able to respond to 5W1H questions.
		5th	Integrity Beginner Unit 2 / TOEIC Preparation	Able to understand short dialogues in English.
		6th	Integrity Beginner Unit 2 / TOEIC Preparation	Able to understand a short speech in English.
		7th	Integrity Beginner Unit 2 / TOEIC Preparation	Able to understand short dialogues in English.
		8th	mini test①	Able to summarize up to 7th weeks.
	4th Quarter	9th	Integrity Beginner Unit 3 / TOEIC Preparation	Understand grammar.
		10th	Integrity Beginner Unit 3 / TOEIC Preparation	Able to understand English sentences that include the progressive tense.
		11th	Integrity Beginner Unit 3 / TOEIC Preparation	Able to respond to 5W1H questions.
		12th	Integrity Beginner Unit 4 / TOEIC Preparation	Able to understand short dialogues in English.
		13th	Integrity Beginner Unit 4 / TOEIC Preparation	Able to understand a short speech in English.
		14th	Integrity Beginner Unit 4 / TOEIC Preparation	Able to understand short dialogues in English.
		15th	mini test②	Able to summarize up to 14th weeks.
		16th	Return and commentary of exam answers	Be able to have feedback on the endterm examamination.

Evaluation Method and Weight (%)

	Mini-test	Presentation	Assignments	Total
Subtotal	50	25	25	100
Basic Proficiency	50	25	25	100
Specialized Proficiency	0	0	0	0
Cross Area Proficiency	0	0	0	0

Tsuyama College	Year	2023	Course Title	Theory of International Culture

Course Information

Course Code	0010	Course Category	General / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 1st
Term	First Semester	Classes per Week	2
Textbook and/or Teaching Materials	Textbook : None (Handouts will be provided)		
Instructor	WATANABE Tomomi		

Course Objectives

Learning purposes :
By deepening their understanding of China, a country with which they share a common bond, they will be able to put aside cultural prejudices and acquire the ability to contribute to Japan-China exchange.

Course Objectives :
１．To understand Chinese culture and society, to understand and tolerate the aspects that are different from those of Japan, and to have a spirit of cooperation and coexistence with them.
◎２．To understand the existence of other cultures and be able to consider the thoughts and actions that Japan and Japanese people should adopt.
３．Be able to explain one's own arguments and ideas logically.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	To understand Chinese culture and society, to understand and tolerate the aspects that are different from those of Japan, and to have a spirit of cooperation and coexistence with them.	To understand Chinese culture and society, and to understand and tolerate aspects that are different from those in Japan.	To understand the culture and society of China, and to appreciate the aspects that are different from those of Japan.	Not reached left.
Achievement 2	To understand the existence of other cultures and be able to consider the thoughts and actions that Japan and Japanese people should adopt.	To understand the existence of other cultures and to consider the actions that should be taken by Japan and Japanese people.	To be able to think about the thoughts and actions that Japan and Japanese people should take in relation to other cultures.	Not reached left.
Achievement 3	To be able to describe one's own arguments and ideas with passion and persuasiveness.	To be able to describe one's own arguments and thoughts with passion.	To be able to describe one's own arguments and thoughts.	Not reached left.

Assigned Department Objectives

Teaching Method

Outline	General or Specialized : General Field of learning : Foreign culture Foundational academic disciplines : Chinese/Oriental History/Chinese Philosophy/Chinese Literature Relationship with Educational Objectives : This class is equivalent to "(6) By attending off-campus training, special lectures on advanced technology, study groups, etc., and also by coordinating with the regional community, students come to understand the importance of a global perspective." Relationship with JABEE programs : The main goal of learning / education in this class is "(F). Course outline : Chinese culture and society will be explained. Assigned readings will be given as appropriate.
Style	"Course method : The course will be conducted in a lecture format using teaching materials prepared by the instructor. Grade evaluation method : Assignments (40%) + Report (60%). No regular examination."
Notice	Precautions on the enrollment : This is a class that requires study outside of class hours. A total of 45 hours of study is required per credit, including both class time and study outside class time. Follow the instructions of the instructor regarding study outside of class hours. Course advice : As a preparatory study, students should pay attention to the news about China and Taiwan. The course is required for the bachelor's degree, so students should be well aware of this. Foundational subjects : World History (1st year), Politics and Economy (2nd), a Theory of Cross-cultural Society Ⅰ(4th) Related subjects : Practice on International Communication (Advanced 1st year), Social Sciences (Advanced 2nd) Attendance advice : If you are late for the start time, you will be treated as absent after 20 minutes. Participate actively in classes and submit assignments on time. The use of cell phones or smart phones during class is not allowed.

Characteristics of Class / Division in Learning			
☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Elective subjects

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	History of Exchange between China and Japan	By learning about the relationship between Japan and China, students will understand the necessity of China studies.
		2nd	Geography and Language of China	To understand the geography and language of China.
		3rd	Ethnicity and Society in China	To understand the ethnic minorities in China.
		4th	Chinese Culture 1	To understand the Chinese lifestyle.
		5th	Chinese Culture 2	To understand Chinese thought and religion.
		6th	Aspects of Contemporary China	To understand the social situation and other aspects of contemporary China.
		7th	(mid-term test)	
		8th	History of Taiwan	To understand the history of Taiwan.
	2nd Quarter	9th	Geography and Language of Taiwan	To understand the geography and language of Taiwan.
		10th	Ethnicity and Society in Taiwan	To understand the ethnic and social conditions of Taiwan.
		11th	Taiwanese Culture 1	To understand the lifestyle of Taiwanese people.
		12th	Taiwanese Culture 2	To understand the ideology and religion of Taiwan.
		13th	Aspects of Contemporary Taiwan	To understand the social situation of contemporary Taiwan.
		14th	China and Taiwan, Hong Kong	To understand the relationship between China, Taiwan and Hong Kong.
		15th	(Term-end examination)	
		16th	Summary	Summarize and think about the future of Japan-China relations.

Evaluation Method and Weight (%)

	Examination	Problem report	Assginment	Quiz	Total
Subtotal	0	60	40	0	100
Basic Proficiency	0	60	40	0	100
Specialized Proficiency	0	0	0	0	0
Cross Area Proficiency	0	0	0	0	0

Tsuyama College	Year	2023	Course Title	Methods of Scientific Experiments

Course Information

Course Code	0001	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 1st
Term	First Semester	Classes per Week	2
Textbook and/or Teaching Materials	Textbooks : Introduction to the Daguchi Method" by Kazuo Tatebayashi (JUSE)		
Instructor	YAMAGUCHI Daizo,KAWAI Masahiro		

Course Objectives

Learning purposes : Students will learn about the Taguchi Method, a technique developed from the Design of Experiments, in order to be able to carry out appropriate and reliable experiments and develop techniques.

Course Objectives :
1. Understand the role and concept of parameter design and be able to explain the procedure.
2. Understand the concept and explain the procedure of parameter design of dynamic characteristics.
3. To understand the parameter design in the technology development stage.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	Understand the role and concept of parameter design and be able to explain the procedure.	Understand the role and concept of parameter design and its procedures.	Understand the role and concept of parameter design and its procedures from the material.	Not reached the left column.
Achievement 2	Understand the concept of parameter design of dynamic characteristics and be able to explain the procedure.	Understand the concept and procedure of parameter design of dynamic characteristics.	Understand the concept and procedure of parameter design of dynamic characteristics by looking at the material.	Not reached the left column.
Achievement 3	Understand the parameter design in the technology development phase.	Understand the design of parameters at the technology development stage by looking at the material.	Understand, with the advice of a supervisor, the design of parameters in the technological development phase, looking at the material.	Not reached the left column.

Assigned Department Objectives

Teaching Method

Outline	General or Specialized : Specialized Field of learning : Basic and Common Natural Sciences Foundational academic disciplines : Applied Physics and Engineering Fundamentals / Engineering Fundamentals Relationship with Educational Objectives : This class is equivalent to "(1) Cultivate human creative talent, rich in practical abilities". Relationship with JABEE programs : The main goals of learning / education in this class is (A). Course outline : In the natural sciences, where demonstration and reproducibility are important, experimentation is one of the most important means of natural cognition. In this course, students will learn about the Taguchi Method, a technique that evolved from the Design of Experiments method, in order to be able to carry out appropriate and reliable experiments and to develop techniques.
Style	Course method : Lectures will be based on the textbook. Exercises will be given on the computer as students progress to deepen their understanding. Grade evaluation method : (1) Distribution of marks: Examination (report method) 100%. (2) Evaluation criteria: Students will be evaluated on the basis of their basic content and understanding of the items listed in the achievement objectives and their basic application. 60 points or more is a passing score. (3) Re-examination: Students who score less than 60 points will be re-examined if the teacher deems it necessary.

Notice	Precautions on the enrollment : This is a class that requires study outside of class hours. A total of 45 hours of study is required per credit, including both class time and study outside class time. Follow the instructions of the instructor regarding study outside of class hours. Course advice : Students are expected to take an active role in acquiring knowledge in a wide range of fields, including some that are not their own. It is essential that students prepare for the course by studying and reviewing, and that they maintain an interest in technological development and quality control. Foundational subjects : Experiments and graduation theses in the department (2nd-5th years). Related subjects : Special Study on Mechanical and Control Systems Engineering I, II (1st and 2nd year), Special Study on Electronic and Information Systems Engineering I, II (1st and 2nd), Special Experiment on Mechanical and Control Systems Engineering (1st), Special Experiment on Electronic and Information Systems Engineering (1st). Attendance advice : In the lectures, various examples of case studies will be given so that students can learn how to think about them. Late arrival after 15 minutes from the start of a credit hour will result in an absence from class.

Characteristics of Class / Division in Learning

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

Elective subjects

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance, Chap1 system and stability (Study outside class time: Assignment (1) Chap1)	To be able to understand engineered systems.
		2nd	Chap2 Introduction to Parameter Design 1 (Study outside class time: Assignment (2) Chap2)	Be able to understand the role, concepts and procedures of parameter design.
		3rd	Chap2 Introduction to Parameter Design 2 (Study outside class time: Assignment (2) Chap2)	Be able to understand examples of desirable parameter design.
		4th	Chap3 Parameter design of dynamic characteristics 1 (Study outside class time: Assignment (3) Chap3)	Understand the concept and procedure of parameter design of dynamic characteristics.
		5th	Chap3 Design of kinetic parameters 2 (Study outside class time: Assignment (3) Chap3)	Be able to understand the types of dynamic characteristics and how to calculate the signal-to-noise ratio.
		6th	Chap 4: Parameter design in the technology development phase 1 (Study outside class time: Assignment (4) Chap 4)	Be able to understand the design of parameters by objective function and technical means.
		7th	Chap 4: Parameter design in the technology development phase 2 (Study outside class time: Assignment (4) Chap 4)	Be able to understand examples of parameter design with basic functions.
		8th	1st semester mid-term exam	
	2nd Quarter	9th	Chap5 Parameter design for nonlinear systems, Chap6 Parameter design when input/output cannot be measured (Study outside class time: Assignment (5 and 6) Chap5 and 6)	Be able to understand an example where the goal is to have a non-linear relationship between inputs and outputs. Understand the parameter design using the dynamic functional window method.
		10th	Chap7 Designing parameters when input and output cannot be measured (Study outside class time: Assignment (7) Chap7)	Be able to understand software debugging using orthogonal tables.
		11th	Chap8 Loss function and its use 1 (Study outside class time: Assignment (8) Chap8)	Be able to understand the tolerance design of systems using loss functions.
		12th	Chap8 Loss function and its use 2 (Study outside class time: Assignment (8) Chap8)	Be able to understand the loss functions of the desirability and desirability characteristics.
		13th	Chap9 MT System 1 (Study outside class time: Assignment (9) Chap9)	Be able to understand the concept and technical challenges of anomaly determination.
		14th	Chap9 MT System 2 (Study outside class time: Assignment (9) Chap9)	Be able to understand the use of Mahara's bis distance in MT systems.
		15th	Chap10 Taguchi Method and Development Process Reform (Study outside class time: Assignment (10) Chap10)	Explain the problems with current development methods and the status and results of organisational use of the Taguchi Method.
		16th	Summary	

Evaluation Method and Weight (%)

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

Tsuyama College	Year	2023	Course Title	Technical English Reading

Course Information

Course Code	0002	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 1st
Term	First Semester	Classes per Week	2
Textbook and/or Teaching Materials	Assignments		
Instructor	KATORI Shigetaka		

Course Objectives

Learning purpose: To develop the ability to understand the contents of dissertations written in English and utilize them in work, and to summarize and convey them in an easy-to-understand manner.

Course objectives:
1. To develop the ability to read industrial English papers and report on their technical contents.
2. Develop the ability to summarize the research content currently underway as an industrial English dissertation.
3. Improve communication skills by making presentations in English.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	Reading industrial English papers and grasp the points of the surgical content, and an be reported briefly	The students can read industrial English papers, grasp the points of the technical content, and report accurately.	Students can read industrial English papers, understand the points of the technical content, and report them together.	Students cannot read industrial English papers, understand the points of the technical content, and report them together.
Achievement 2	Has the ability to concisely summarize one's research content as an industrial English dissertation	The students have the ability to summarize their research as an industrial English dissertation.	Students can summarize my research contents in accurate English sentences	Students cannot summarize my research contents in accurate English sentences
Achievement 3	Being able to present your research in English accurately and concisely using technical words	The students can accurately present their research in English using technical words.	Students can present their research in accurate English	Students cannot present their research in accurate English

Assigned Department Objectives

Teaching Method

Outline	General or Specialized : Specialized Field of study : Electrical / electronic, electromagnetism Relationship with JABEE programs : The main goals of this subject are "(A) Deepening of basic knowledge about technology and You can learn information technology and apply it, and (F) you can think about things from a global perspective, and you can think about the area. It is possible to develop the comprehensive ability by cooperating with (E). Outline of the class: In today's society, where globalization is advancing rapidly, English reading comprehension, writing skills, and conversation skills are indispensable for engineering students. This course is intended to acquire English proficiency centered on technical English, and aims to develop English proficiency using English dissertations and English commentary in the engineering field as teaching materials.
Style	Class method: In the first half, students will develop reading comprehension of basic industrial English, as well as acquire basic syntax and grammar, and acquire basic words. In the second half Will present each person's research contents in English. Improve communication skills between members. Grade evaluation method: Assignment report (50%), presentation (50%) Regular tests may be conducted.
Notice	Precautions for taking this course: This course is a "course that requires study outside of class hours". Combine the class time and the study outside the class time, 45 hours of study is required per credit. For study outside of class hours, follow the instructions of the instructor. Course advice: Always read English newspapers and international dissertations to familiarize yourself with English. Basic subjects: English subjects such as English III and IV taken in the 3rd and 4th years of this course, electromagnetism (electrical and electronic, information 3,4), electronic engineering (electrical and electronic) , Information 3) etc. Advice on attendance: Those who attend the class at the beginning of each credit time and who do not receive a reply and then enter the room will be late. .. If you are late 3 times, you will be absent once. Study outside of class hours (preparation and review and dissertation submission) must be conducted. When making a presentation, be prepared to make a logical presentation in a short time.

Characteristics of Class / Division in Learning

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

Elective subjects

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance	
		2nd	Basic acquisition of technical English and reading of scientific English 1	Students can read industrial English papers, understand the points of the technical content, and report.

		3rd	Basic acquisition of technical English and reading of scientific English 2	Students can read industrial English papers, understand the points of the technical content, and report.
		4th	Basic acquisition of technical English and reading of scientific English 3	Students can read industrial English papers, understand the points of the technical content, and report.
		5th	Basic acquisition of technical English and reading of scientific English 4	Students can read industrial English papers, understand the points of the technical content, and report.
		6th	Basic acquisition of technical English and reading of scientific English 5	Students can read industrial English papers, understand the points of the technical content, and report.
		7th	Basic acquisition of technical English and reading of scientific English 6	Students can read industrial English papers, understand the points of the technical content, and report.
		8th	Basic acquisition of technical English and reading of scientific English 7	Students can read industrial English papers, understand the points of the technical content, and report.
	2nd Quarter	9th	Reading English papers and writing research papers.	Students can read industrial English papers, understand the points of the technical content, and report. I can summarize my research contents in English.
		10th	Reading English papers and writing research papers.	Students can read industrial English papers, understand the points of the technical content, and report. I can summarize my research contents in English.
		11th	Reading English papers and writing research papers.	Students can read industrial English papers, understand the points of the technical content, and report. I can summarize my research contents in English.
		12th	Reading English papers and writing research papers.	Students can read industrial English papers, understand the points of the technical content, and report. I can summarize my research contents in English.
		13th	Presentation of research content in English 1	Students can make your research content into presentation materials in English
		14th	Presentation of research content in English 2	Students can make your research content into presentation materials in English
		15th	Presentation of research content in English 3	Students can make your research content into presentation materials in English
		16th		

Evaluation Method and Weight (%)

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

Tsuyama College	Year	2023	Course Title	General Aspects of Engineering I

Course Information

Course Code	0003	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 1st
Term	Intensive	Classes per Week	
Textbook and/or Teaching Materials	Textbook: As requested by the student		
Instructor	TERAMOTO Takayuki		

Course Objectives

Learning purposes : (1) When students from other educational institutions wish to enroll in a JABEE-compliant technical education program, they can make up the credits they have earned prior to enrollment that cannot be approved as courses at the school.
(2) To supplement the specialized knowledge and abilities of students who have entered a major that differs from their original major from other educational institutions, and to promote effective learning in the major course.

Course Objectives :
1. To deepen the basic knowledge and skills related to the major.
2. To be able to use the knowledge obtained for study and research in the major.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	To be able to systematically understand the basic knowledge in a specific academic field of study and to apply engineering skills to problems and issues.	To be able to systematically understand the basic knowledge of a specific discipline and to apply engineering skills to problems and issues.	The student will be able to apply basic knowledge and engineering skills in a specific discipline to problems and issues.	Cannot apply basic knowledge and engineering skills in a specific discipline to a problem.
Achievement 2	To be able to tackle issues and problems by integrating the various knowledge of specialized engineering that has been learned so far, and to consider the impact of knowledge on society	To be able to integrate and develop the knowledge of the specialized subjects studied so far and to apply it to problems and issues.	To be able to apply the knowledge of the specialized subjects studied so far to problems and issues.	Cannot apply the knowledge of the specialized subject studied so far to problems.

Assigned Department Objectives

Teaching Method

Outline	General or Specialized : Specialized Field of learning : Common and basic natural sciences Foundational academic disciplines : Engineering/Electrical and Electronic Engineering/Electronic Devices and Equipment Relationship with Educational Objectives :This class is equivalent to "(1) Cultivate human creative talent, rich in practical abilities". Relationship with JABEE programs :The main goals of learning / education in this class is (B). Course outline :This class is designed for students who entered the major from other educational institutions for the following purposes. This course does not count as a credit toward completion of the major. (1) In order for students from other educational institutions to become enrolled in JABEE-compliant technical education programs, all credits earned prior to enrollment will be reviewed for content equivalence with courses offered by the school. At this time, credits that cannot be approved as JABEE courses will be matched to JABEE courses. (2) Courses are designed to supplement the specialized knowledge and abilities of students who have enrolled in a major that differs from their original major from other educational institutions in order to effectively advance their studies in the major course. The content of the courses will be determined in consideration of the departments and courses taken before admission.
Style	Course method : The content of study will be determined according to the student's educational institution and past study. Since the classes are one-on-one, students' basic academic skills and level of understanding will be checked as we proceed. In order to deepen their understanding, students will be required to practice problems and write reports to acquire comprehensive skills. Grade evaluation method : Adopt an appropriate evaluation method according to the student and content.

Notice	Precautions on the enrollment : Students who have entered the major from other educational institutions and who fall under the categories (1) and (2) described in the course outline must take this course. This course does not count as a credit toward completion of the major. In addition, this course is a "subject requiring study outside class hours. A total of 45 hours of study is required per credit, including both class time and study outside class time. Follow the instructions of the instructor regarding study outside of class hours. Course advice : This subject is the most important main subject in the major. Therefore, students are expected to take the initiative in all aspects and do their best. In addition, in the second year, when students receive a bachelor's degree from the National Institution for Academic Degrees and University Evaluation (NIAD), they are required to submit a "Master's Course Plan" and a "Summary of the Results of the Master's Course". In addition to the above, it is necessary for the students to proceed with their research activities keeping in mind that the contents of the special research will be the basis for all of these. In addition, students are required to submit a research record at the end of the first and second semesters. Foundational subjects : All subjects Related subjects : General subjects to be studied in the major Attendance advice : This subject is the most important main subject in the major. Therefore, students are expected to take the initiative in all aspects and do their best. In addition, in the second year, when students receive a bachelor's degree from the National Institution for Academic Degrees and University Evaluation (NIAD), they are required to submit a "Master's Course Plan" and a "Summary of the Results of the Master's Course". In addition to the above, it is necessary for the students to proceed with their research activities keeping in mind that the contents of the special research will be the basis for all of these. In addition, students are required to submit a research record at the end of the first and second semesters.

Characteristics of Class / Division in Learning

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

Elective subjects

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		2nd	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		3rd	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		4th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		5th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		6th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		7th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		8th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
	2nd Quarter	9th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		10th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		11th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		12th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		13th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		14th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		15th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		16th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
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 (%)

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

Tsuyama College	Year	2023	Course Title	General Aspects of Engineering Ⅱ

Course Information

Course Code	0004	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 1st
Term	Intensive	Classes per Week	
Textbook and/or Teaching Materials	Textbook: As requested by the student		
Instructor	TERAMOTO Takayuki		

Course Objectives

Learning purposes : (1) When students from other educational institutions wish to enroll in a JABEE-compliant technical education program, they can make up the credits they have earned prior to enrollment that cannot be approved as courses at the school.
(2) To supplement the specialized knowledge and abilities of students who have entered a major that differs from their original major from other educational institutions, and to promote effective learning in the major course.

Course Objectives :
1. To deepen the basic knowledge and skills related to the major.
2. To be able to use the knowledge obtained for study and research in the major.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	To be able to systematically understand the basic knowledge in a specific academic field of study and to apply engineering skills to problems and issues.	To be able to systematically understand the basic knowledge of a specific discipline and to apply engineering skills to problems and issues.	The student will be able to apply basic knowledge and engineering skills in a specific discipline to problems and issues.	Cannot apply basic knowledge and engineering skills in a specific discipline to a problem.
Achievement 2	To be able to tackle issues and problems by integrating the various knowledge of specialized engineering that has been learned so far, and to consider the impact of knowledge on society	To be able to integrate and develop the knowledge of the specialized subjects studied so far and to apply it to problems and issues.	To be able to apply the knowledge of the specialized subjects studied so far to problems and issues.	Cannot apply the knowledge of the specialized subject studied so far to problems.

Assigned Department Objectives

Teaching Method

Outline	General or Specialized : Specialized Field of learning : Common and basic natural sciences Foundational academic disciplines : Engineering/Electrical and Electronic Engineering/Electronic Devices and Equipment Relationship with Educational Objectives :This class is equivalent to "(1) Cultivate human creative talent, rich in practical abilities". Relationship with JABEE programs :The main goals of learning / education in this class is (B). Course outline :This class is designed for students who entered the major from other educational institutions for the following purposes. This course does not count as a credit toward completion of the major. (1) In order for students from other educational institutions to become enrolled in JABEE-compliant technical education programs, all credits earned prior to enrollment will be reviewed for content equivalence with courses offered by the school. At this time, credits that cannot be approved as JABEE courses will be matched to JABEE courses. (2) Courses are designed to supplement the specialized knowledge and abilities of students who have enrolled in a major that differs from their original major from other educational institutions in order to effectively advance their studies in the major course. The content of the courses will be determined in consideration of the departments and courses taken before admission.
Style	Course method : The content of study will be determined according to the student's educational institution and past study. Since the classes are one-on-one, students' basic academic skills and level of understanding will be checked as we proceed. In order to deepen their understanding, students will be required to practice problems and write reports to acquire comprehensive skills. Grade evaluation method : Adopt an appropriate evaluation method according to the student and content.

Notice	Precautions on the enrollment : Students who have entered the major from other educational institutions and who fall under the categories (1) and (2) described in the course outline must take this course. This course does not count as a credit toward completion of the major. In addition, this course is a "subject requiring study outside class hours. A total of 45 hours of study is required per credit, including both class time and study outside class time. Follow the instructions of the instructor regarding study outside of class hours. Course advice : This subject is the most important main subject in the major. Therefore, students are expected to take the initiative in all aspects and do their best. In addition, in the second year, when students receive a bachelor's degree from the National Institution for Academic Degrees and University Evaluation (NIAD), they are required to submit a "Master's Course Plan" and a "Summary of the Results of the Master's Course". In addition to the above, it is necessary for the students to proceed with their research activities keeping in mind that the contents of the special research will be the basis for all of these. In addition, students are required to submit a research record at the end of the first and second semesters. Foundational subjects : All subjects Related subjects : General subjects to be studied in the major Attendance advice : This subject is the most important main subject in the major. Therefore, students are expected to take the initiative in all aspects and do their best. In addition, in the second year, when students receive a bachelor's degree from the National Institution for Academic Degrees and University Evaluation (NIAD), they are required to submit a "Master's Course Plan" and a "Summary of the Results of the Master's Course". In addition to the above, it is necessary for the students to proceed with their research activities keeping in mind that the contents of the special research will be the basis for all of these. In addition, students are required to submit a research record at the end of the first and second semesters.

Characteristics of Class / Division in Learning

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

Elective subjects

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		
2nd Semester	3rd Quarter	1st	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		2nd	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		3rd	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		4th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		5th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		6th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		7th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		8th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
	4th Quarter	9th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		10th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.

		11th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		12th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		13th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		14th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		15th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.
		16th	The course will be offered in specialized areas that need to be supplemented, if necessary, after interviewing the student.	Set content-appropriate goals.

Evaluation Method and Weight (%)

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

Tsuyama College	Year	2023	Course Title	Thesis Work I

Course Information

Course Code	0005	Course Category	Specialized / Compulsory
Class Format	Experiment	Credits	School Credit: 8
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 1st
Term	Year-round	Classes per Week	8
Textbook and/or Teaching Materials			
Instructor	TERAMOTO Takayuki,KATORI Shigetaka,NISHIO Kimihiro,OKE Shinichiro,YAMAMOTO Tsunayuki,NAKAMURA Naoto,YABUKI Noboru,TAKETANI Hisashi,ONISHI Atsushi,KAWANAMI Hiromichi,SORI Hitoshi		

Course Objectives

Learning purposes : To acquire the ability to identify engineering and technical problems and to solve them concretely, and to acquire the basic skills of an engineer.

Course Objectives :
1. To be able to deepen basic knowledge of technology and acquire and apply information technology.
2. To be able to carry out experiments independently and continuously, and to analyze and consider data.
3. To acquire and demonstrate problem-solving skills, research skills, communication skills, and presentation skills.
◎4. Understand the ethics of engineers, be able to think multilaterally from a global perspective, and develop comprehensive abilities in cooperation with the local community.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	To be able to understand technology and research trends related to special research by acquiring basic knowledge of technology and information technology based on literature and material research, and to be able to understand and explain the purpose of research in relation to these.	To be able to understand the purpose of special research by acquiring basic knowledge about technology and information technology based on literature and material research.	The student will be able to state the purpose of the special research using basic knowledge of technology and information technology based on a survey of literature and materials.	Students do not have basic knowledge of technology and information technology based on literature and material research, and are unable to understand the purpose of special research.
Achievement 2	To be able to formulate a research plan to solve engineering problems, to carry out experiments independently and continuously, and to analyze and discuss data.	To be able to plan a research project to solve an engineering problem, and to understand the results obtained by carrying out an experiment independently and continuously.	Develop a research plan to solve engineering problems and carry out experiments independently and continuously.	Inability to formulate a research plan and to carry out experiments independently and continuously.
Achievement 3	Acquire and demonstrate problem-solving, research, communication, and presentation skills. To be able to use effective presentations to explain things to others in an easy-to-understand manner.	Problem-solving, research, communication, and presentation skills.	Explain the importance of problem-solving, research, communication, and presentation skills.	No problem-solving, research, communication, or presentation skills.
Achievement 4	Understand the effects and influences of technology on society and nature, understand the responsibilities that engineers have to society, and be able to develop comprehensive abilities, such as thinking about things from multiple perspectives.	Understand the impact and effects of technology on society and nature, understand the responsibility that engineers have to society, and be able to think about things from multiple perspectives.	Understand the effects and impact of technology on society and nature, and express the responsibility that engineers have to society.	Cannot explain the responsibilities that engineers have to society.

Assigned Department Objectives

Teaching Method

Outline	General or Specialized : Specialized Field of learning : Experiment and practice Foundational academic disciplines : Engineering/Electrical and Electronic Engineering, Information Engineering Relationship with Educational Objectives :This class is equivalent to "(4) Develop multi-disciplinary ability". Relationship with JABEE programs :The main goals of learning / education in this class is (D). In this class, students are expected to acquire the following design skills: conceptual ability, problem-setting ability, ability to recognize problems from the viewpoint of public health and safety, culture, economy, environment, ethics, etc., ability to find solutions under the constraints arising from these problems, ability to express the conceptualized ideas in diagrams, sentences, formulas, programs, etc., and ability to plan and implement continuously. In this course, students will be involved in developing the ability to find solutions under constraints arising from these problems, the ability to express their concepts in diagrams, sentences, formulas, programs, etc., and the ability to plan and implement continuously. In addition, students are required to attend a lecture on engineering ethics. Course outline :This class is designed to cultivate the ability to discover problems and solve problems independently by working on distinctive research topics, and to deepen knowledge and acquire research and development skills. The results of the research will be submitted as a summary of the interim presentation, and if necessary, external presentations will be made at academic conferences.
Style	Course method : Students are expected to carry out research activities independently under the guidance of their supervisor. In the course of their efforts, the instructors provide guidance and advice on how to conduct engineering research, write scientific and technical papers, and make presentations and discussions as appropriate. Grade evaluation method : The supervisor will evaluate according to the conditions indicated in the lesson plan. In particular, the theme presentation will be evaluated as professional ability (10%), and the off-campus practical training report will be evaluated as cross-disciplinary ability (10%). In addition, the preparation for the midterm presentation (outline, preliminary draft) and the report on the lecture on engineering ethics will be evaluated as professional competence (70%), and the report on the fieldwork will be evaluated as cross-disciplinary competence (10%). In the evaluation, the level of achievement will be evaluated for each item of (A) and (C) to (F) of the educational program, and the student will pass if the total evaluation score is 60% or more. If the evaluation score does not reach the passing score, guidance will be given and re-evaluation may be conducted.
Notice	Precautions on the enrollment : This is a class that requires study outside of class hours. A total of 45 hours of study is required per credit, including both class time and study outside class time. Follow the instructions of the instructor regarding study outside of class hours. And as part of the special research, majors are required to conduct practical training at private companies outside the university (off-campus training). 30 hours of off-campus training is aimed at deepening knowledge and improving research skills so as not to be separated from real-world technology. Course advice : This subject is the most important main subject in the major. Therefore, students are expected to take the initiative in all aspects and do their best. In addition, in the second year, when students receive a bachelor's degree from the National Institution for Academic Degrees and University Evaluation (NIAD), they are required to submit a "Master's Course Plan" and a "Summary of the Results of the Master's Course". In addition to the above, it is necessary for the students to proceed with their research activities keeping in mind that the contents of the special research will be the basis for all of these. In addition, students are required to submit a research record at the end of the first and second semesters. Foundational subjects : All subjects Related subjects : General subjects to be studied in the major Attendance advice : This subject is the most important main subject in the major. Therefore, students are expected to take the initiative in all aspects and do their best. In addition, in the second year, when students receive a bachelor's degree from the National Institution for Academic Degrees and University Evaluation (NIAD), they are required to submit a "Master's Course Plan" and a "Summary of the Results of the Master's Course". In addition to the above, it is necessary for the students to proceed with their research activities keeping in mind that the contents of the special research will be the basis for all of these. In addition, students are required to submit a research record at the end of the first and second semesters.

Characteristics of Class / Division in Learning

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

Required subjects

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Course Advice This course is the most important main course in the major. Therefore, students are expected to take the initiative and do their best in all aspects of the course. In the second year, students are required to submit a "Study Plan for the Integrated Course" and "Summary of the Results of the Integrated Course" in order to obtain a "Bachelor's Degree" from the National Institution for Academic Degrees and University Evaluation. In addition to the above, it is necessary for students to submit a research plan and a summary of the results of their studies when they receive a bachelor's degree from the National Institution for Academic Degrees and University Evaluation. In addition, students are required to submit a research record at the end of the first and second semesters.	

		2nd	Students will proceed systematically with each special research theme, but the major debriefings and other events that are minimally required during this period are as follows Students will continue their research in two years after receiving this credit.	
		3rd	Time for research topic and research plan (April-May)	
		4th	Students identify an area of research to develop and find a research topic. Students deepen their understanding of the purpose and background of their research and decide on a specific topic. Students will discuss research methods and develop a research plan. The student will present this research theme and plan.	
		5th	Theme presentation (around June)	
		6th		
		7th		
		8th		
	2nd Quarter	9th		
		10th		
		11th		
		12th		
		13th		
		14th		
		15th	Off-Campus Internship (Summer Break)	
		16th	The results of the study will be presented to the director of the external study program (around September).	
2nd Semester	3rd Quarter	1st	A questionnaire will be administered after the field training.	
		2nd	Debriefing session for off-campus training (around October)	
		3rd		
		4th		
		5th		
		6th		
		7th		
		8th		
	4th Quarter	9th		
		10th		
		11th		
		12th		
		13th		
		14th		
		15th	Period of trial and verification of experiments and analysis (June to February)	
		16th	Preparation for interim presentation (preparation of outline and preliminary report for interim presentation, etc.)	

Evaluation Method and Weight (%)

	Report	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	80	20	0	0	0	0	100
Basic Proficiency	0	0	0	0	0	0	0
Specialized Proficiency	70	10	0	0	0	0	80
Cross Area Proficiency	10	10	0	0	0	0	20

Tsuyama College	Year	2023	Course Title	Advanced Electromagnetism

Course Information

Course Code	0007	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 1st
Term	First Semester	Classes per Week	2
Textbook and/or Teaching Materials	John A.Buck, William H.Hayt.Jr “Engineering Electromagnetics” eighth Edition, McGRAW-HILL INTERNATIONAL EDITION		
Instructor	NAKAMURA Naoto,UETSUKI Tadao		

Course Objectives

Learning purposes :
To acquire the ability to express physical phenomena related to electromagnetism with mathematical expressions and to understand the physical meaning of the solutions.

Course Objectives :
1. To be able to calculate the derivative and integral of vector quantities in electric and magnetic fields.
2. To be able to explain the physical meaning of Gauss' law.
3. To be able to understand and calculate the physical meaning of Ampere-Maxwell's law.
4. To be able to explain the physical meaning of Maxwell's equations and derive the wave equation for electromagnetic waves.
5. To acquire reading comprehension skills in technical English through the lecture.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	The student can differentiate and integrate vector quantities in various coordinate systems (Cartesian, spherical, and cylindrical).	The student can differentiate and integrate vector quantities in a particular coordinate system.	The student cannot calculate vector quantities.
Achievement 2	The student can understand Gauss's theorem and be able to use the divergence theorem in all coordinate systems (Cartesian, spherical, and cylindrical) to determine electric flux, electric field, electric charge, etc.	The student can understand Gauss's theorem and be able to use the divergence theorem to determine electric flux, electric field, electric charge, etc. in a specific coordinate system.	The student cannot calculate electric flux, electric field, electric charge, etc. in a particular coordinate system
Achievement 3	The student can derive Maxwell's equations by introducing the concept of displacement current to Gauss's theorem, Ampere's law of circumscribed integration, and Faraday's law, and explain their physical meaning.	The student can understand that Maxwell's equations can be derived by introducing the concept of displacement current to Gauss's theorem, Ampere's law of circumscribed integration, and Faraday's law, and be able to explain their physical meaning.	The student cannot understand the concept of displacement current.

Assigned Department Objectives

Teaching Method

Outline	General or Specialized : Specialized Field of learning : Electrical , Electronic Foundational academic disciplines : Engineering / Electrical and electronic engineering and related fields Relationship with learning objectives of Advanced Engineering Course: This subject corresponds to the learning objective of the major, "(2) Acquire knowledge of specialized technical fields related to electricity, electronics, information, and control, and acquire the ability to use this knowledge in the design, manufacture, and operation of machines and systems." This course corresponds to the learning objectives of the major. Relationship with JABEE programs : The main learning and educational achievement goal of this course is "(A) To deepen basic knowledge of technology, A-2: To acquire knowledge of specialized fields related to "electricity and electronics" and "information and control" and to be able to explain them," but it is also incidentally related to "(A-1). Course outline : The main learning and educational achievement goal of this course is "(A) To deepen basic knowledge of technology, A-2: To acquire knowledge of specialized fields related to "electricity and electronics" and "information and control" and to be able to explain them," but it is also incidentally related to "(A-1).
Style	Course method : This class will be offered in 2 credit hours per week in second semester. Classes are centered around the textbook and board. Students are required to submit reports. Grade evaluation method : Exams (60%) + Reports (40%).

Notice	Precautions on the enrollment : This course is a "course that requires study outside of class hours. A total of 45 hours of study is required per credit, including both class time and study outside class time. Students are required to follow the instructions of the instructor regarding study outside of class hours. Foundational subjects : Basic Linear Algebra (2nd year), Differential and Integral Calculus II (3rd year), Differential Equations (3rd year), Electromagnetism I, II (3rd year, 4th year), Electric Circuit I, II (3rd year, 4th year) Related subjects : Thesis work (Adv. 1st, 2nd years) Attendance advice : It is recommended that you take notes while understanding what is written on the board. If you are late, you will be counted as having been tardy for half of the time after attendance is taken. If you are late more than that, you will be counted as absent.

Characteristics of Class / Division in Learning

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

Elective subjects

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance, Vector Analysis	Review of vector analysis
		2nd	Coulomb’s Law, Electric Field Intensity	To understand the concept of Coulomb's law, electric field, and proximity action
		3rd	Electric Flux Density, Gauss's Law	To understand Gauss's law for electric fields
		4th	Application of Gauss's Law	To be able to calculate charge density and electric field using Gauss's law
		5th	Energy and Potential, Potential Gradient	To understand electrostatic potential
		6th	Dipole, Energy Density in the Electric Field	To be able to calculate the energy of electric dipole and electrostatic field
		7th	Conductors and Current Density	To understand of steady state current
		8th	Nature of Dielectric Materials	To understand the properties of dielectric materials
	2nd Quarter	9th	Capacitance and Poisson’s Equations	To be able to explain capacitance and Poisson's equation
		10th	Steady Magnetic Field	To understand the basic laws of static magnetic fields
		11th	Force on a Moving Charge	To understand the Lorentz Force
		12th	Magnetic Forces and Materials	To understand the properties of magnetic materials
		13th	Time-Varying Fields	To be able to explain the concept of time-varying electromagnetic fields and displacement currents
		14th	Maxwell’s Equation	To be able to derive the wave equation of electromagnetic waves from Maxwell's equations
		15th	Final exam	
		16th	Return and commentary of exam answers	

Evaluation Method and Weight (%)

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

Tsuyama College	Year	2023	Course Title	Electric and Electronic Apparatus

Course Information

Course Code	0008	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 1st
Term	Second Semester	Classes per Week	2
Textbook and/or Teaching Materials	Distribute materials		
Instructor	YAGI Hideyuki		

Course Objectives

Learning purposes :
Understand the basic ideas and technological trends common to all electrical and electronic device designs through examples, and acquire the basics of standards and reliability required for design. This will contribute to the improvement of the conceptual power of equipment design and the integrated application ability of various technologies.

Course Objectives :
1. Understand the basic ideas and technological trends common to electrical and electronic device design in general.
2. Understand the basic concept of reliability required for designing electrical and electronic devices.
3. Understand technological trends related to sensors.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	The student can understand and apply basic ideas and technological trends common to electrical and electronic device design in general.	The student can understand and explain basic ideas and technological trends common to electrical and electronic device design in general.	The student can understand the basic ideas and technological trends common to all electrical and electronic device designs.	The student will not try to understand the basic ideas and technological trends common to all electrical and electronic device designs.
Achievement 2	The student can understand and utilize the basic concept of reliability required for designing electrical and electronic equipment.	The student can understand and explain the basic concept of reliability required for designing electrical and electronic equipment.	The student can understand the basic concepts of reliability required for the design of electrical and electronic equipment.	The student will not try to understand the basic concepts of reliability required for the design of electrical and electronic equipment.
Achievement 3	The student can understand and utilize the basic concepts of sensors.	The student can understand and explain the basic concepts of sensors.	The student can understand the basic concepts of sensors.	The student will not try to understand the basic concepts of sensors.

Assigned Department Objectives

Teaching Method

Outline	General or Specialized : Specialized Field of learning : Foundational academic disciplines : Engineering / Electrical and electronic engineering / Power and measurement engineering Relationship with Educational Objectives : This class is equivalent to "(2) Acquire basic science and technical knowledge". Course outline : Electrical and electronic equipment is finally designed by comprehensively considering standards, reliability, price, etc., after basic design that requires various quantities based on the design theory of each equipment so as to satisfy the specified specifications and performance. The theory. In this lecture, we will use electric power equipment as an example to learn the technical points to be considered before the final design. In addition, learn recent cases regarding technological trends that designers should always consider.
Style	Course method : Based on the teaching materials, information obtained from the library and the Internet, the class will be conducted in a way that the student in charge presents the relevant theme to other students in an easy-to-understand manner. Imposing reports and exercises as appropriate. Grade evaluation method : Presentation (40%) + Presentation attitude (30%) + Tasks (30%). The presentation evaluates the level of survey fulfillment, comprehension, comprehension of explanation, presentation attitude, and question-and-answer status.

Notice	Precautions on the enrollment : This is a class that requires study outside of class hours. A total of 45 hours of study is required per credit, including both class time and study outside class time. Follow the instructions of the instructor regarding study outside of class hours. Course advice : As a preparatory study to be done in advance, review the contents of the electrical equipment that is the basic subject. Students from the Department of Computer Science may find it difficult to understand the concept of electrical equipment, so it is a good idea to review the basics of electrical equipment. Foundational subjects : Electromagnetism Ⅱ (4th year), Design of Electrical and Electronic Machinery (4th) Related subjects : Power Electronics (Adv. 2nd year) Attendance advice : Instead of taking a passive attitude of listening to the lecture, convey the results of your preparation to other students in an easy-to-understand manner, exchange opinions with teachers and other students, and ask other presenters from a critical point of view. I want you to come to the class as a place to give comments. If it is within 25 minutes of the start of the class, it will be late, and 3 times late will result in 1 absence.

Characteristics of Class / Division in Learning

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

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Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Guidance, outline of electrical equipment	
		2nd	Basic principles of electrical equipment design	
		3rd	Transformer design	
		4th	Optimal design of high voltage thyristor transducer	
		5th	Reliability of electrical and electronic equipment [Theory of failure distribution and reliability]	
		6th	Reliability of electrical and electronic equipment [Reliability analysis method]	
		7th	Energy and sensors	
		8th	Health / longevity and sensors	
	4th Quarter	9th	Safety and sensor	
		10th	Robots and sensors	
		11th	UI and sensor	
		12th	Autonomous driving and sensors	
		13th	Smart factories and sensors	
		14th	Smart agriculture and sensors	
		15th	Marine development and sensors	
		16th		

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Report	Total
Subtotal	0	40	0	30	0	30	100
Basic Proficiency	0	0	0	0	0	0	0
Specialized Proficiency	0	40	0	30	0	30	100
Cross Area Proficiency	0	0	0	0	0	0	0

Tsuyama College	Year	2023	Course Title	Information Science

Course Information

Course Code	0011	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 1st
Term	Second Semester	Classes per Week	2
Textbook and/or Teaching Materials	HTML5による物理シミュレーション		
Instructor	TERAMOTO Takayuki		

Course Objectives

学習目的：物理シミュレーションの基礎を体系的に学習し背景にある基礎概念や，可視化技術およびHTML5とその操作法や設計法について学ぶ。講義に基づいて，各自が実際に検討・設計する。さらに，実際にソフトウェアを動作させることにより，具体的な応用技術を学ぶ。

到達目標
1．物理シミュレーションの基礎を体系的に理解し計算できる。
2．HTLM5を科学コミュニケーションのツールとして利用することができる。
3．与えられた課題に対して適切な技術・ツール等を使って問題を解決することができる。

Rubric

	優	良	可	不可
評価項目1	物理シミュレーションの基礎を体系的に理解し、他人に説明したり応用ができる。	物理シミュレーションの基礎をある程度理解し、応用するための準備ができる。	物理シミュレーションの基礎を必要最低限理解し、基礎的な問題なら解決できる。	物理シミュレーションの基礎を体系的に理解できず、他人に説明したり応用することができない。
評価項目2	HTLM5を科学コミュニケーションのツールとして応用することができる。	HTLM5を科学コミュニケーションのツールとして理解し、ある程度利用することができる。	HTLM5を科学コミュニケーションのツールとして理解し、必要最低限の利用ができる。	HTLM5を科学コミュニケーションのツールとして利用することができない。
評価項目3	与えられた課題に対して適切な技術・ツール等を使って問題を模範的に解決することができる。。	与えられた課題に対して適切な技術・ツール等を使って問題をある程度解決することができる。	与えられた課題に対して適切な技術・ツール等を使って問題を必要最低限解決することができる。	与えられた課題に対して適切な技術・ツール等を使って問題を解決することができない。

Assigned Department Objectives

Teaching Method

Outline	一般・専門の別：専門 学習の分野：情報と計測・制御 基礎となる学問分野：情報科学、情報工学およびその関連分野／計算科学関連 専攻科学習目標との関連：本科目は専攻科学習目標「(1) 数学，物理を中心とした自然科学系の科目に関する知識を深め，人文・社会科学に関する知見を広めて，機械・制御システム工学および電子・情報システム工学に関する基礎学力として応用できる。」に相当する科目である。 技術者教育プログラムとの関連：本科目が主体とする学習・教育到達目標は「（A）技術に関する基礎知識の深化および情報技術の習得とそれらを応用することができる」であり，付随的に(C)に関連する。 授業の概要：コンピュータや通信技術の発展により，さまざまな分野においてコンピュータが組み込まれ，システムのIT（情報技術）化は不可欠なものとなってきた。本講義では，情報システムを構築する上で，重要な技術である実世界の情報をコンピュータ内に記述するための物理シミュレーション技術を中心に基礎的な情報技術の修得をめざす。
Style	授業の方法：学生の事前演習とその発表を中心に授業を進める。情報処理に必要とされる知識全般が習得できるよう演習を進める。また，理解が深まるようレポートを課す。さらにまとめた情報を整理発表できるようプレゼンテーションや発表を行う。 成績評価方法：演習の計画性と実施状況，課題の提出状況　５０%， プレゼンテーションと議論への参加態度　４０% 発表・提出された課題を学生が相互に評価した結果　１０%
Notice	履修上の注意：本科目は「授業時間外の学修を必要とする科目」である。当該授業時間と授業時間外の学修を合わせて，１単位あたり４５時間の学修が必要である。授業時間外の学修については，担当教員の指示に従うこと。 履修のアドバイス：各自の研究活動に生かせるよう心掛けてほしい。 事前に行う準備学習として、テキストの「はじめに」を参考に概要を理解するとともに関連するソフトウェアのダウンロードおよびインストールを実施しておく。 基礎科目：各学科の情報処理に関連する科目および演習 関連科目：工学倫理（専1年），情報処理基礎演習Ⅰ（専1年），情報処理基礎演習Ⅱ（専１年），情報処理応用演習Ⅰ（専1年），情報処理応用演習Ⅱ（専１年），数値解析特論（専2年） 受講上のアドバイス：内容はそれぞれ独立しており，どこからでも自学独習ができるような構成になっている。科目の性格上，必ずしもすべての項目にわたって精通する必要はないが，技術者が報告書や論文を作成する場合や学会発表を行う際に必要な情報処理技術が中心となっている。自分のテーマにあわせて必要部分を深化させてほしい。演習環境に慣れると同時に，各研究室でも同様の演習が行える環境を整備する努力が必要である。 遅刻の扱い：授業開始時の出席確認以降の入室は遅刻として扱う。なお，1時限の半分の時間経過後は欠課として扱う。

Characteristics of Class / Division in Learning

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

選択

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	概要説明および情報処理基礎演習Ｉとの情報交換〔ガイダンス〕	概要の理解
		2nd	演習システムへの登録作業及び個人情報・演習環境の設定作業〔設定〕	演習環境の確認
		3rd	３次元コンピュータグラフィクス入門（３次元オブジェクト）	３次元オブジェクトの理解と演習を通してその説明ができる
		4th	３次元コンピュータグラフィクス入門（プリミティブオブジェクト）	プリミティブオブジェクトの理解と演習を通してその説明ができる
		5th	３次元コンピュータグラフィクス入門（影と光源）	影と光源の理解と演習を通してその説明ができる
		6th	２次元グラフィック描写入門（jqPlotの基本形）	jqPlotの基本形の理解と演習を通してその説明ができる
		7th	２次元グラフィック描写入門（jqPlotのオプション）	jqPlotのオプションの理解と演習を通してその説明ができる
		8th	物理シミュレーション（環境設定）	環境設定の理解と演習を通してその説明ができる
	4th Quarter	9th	物理シミュレーション（基本的な考え方）	基本的な考え方の理解と演習を通してその説明ができる
		10th	物理シミュレーション（３次元空間中の物体）	３次元空間中の物体の理解と演習を通してその説明ができる
		11th	物理シミュレーション（等速運動のアルゴリズム）	等速運動のアルゴリズムの理解と演習を通してその説明ができる
		12th	物理シミュレーション（加速度運動のアルゴリズム）	加速度運動のアルゴリズムの理解と演習を通してその説明ができる
		13th	物理シミュレーション（高精度の計算アルゴリズム）	高精度の計算アルゴリズムの理解と演習を通してその説明ができる
		14th	物理シミュレーション（ニュートンの運動方程式）	ニュートンの運動方程式の理解と演習を通してその説明ができる
		15th		
		16th		

Evaluation Method and Weight (%)

	試験	プレゼンテーション	相互評価	自己評価	課題	小テスト	Total
Subtotal	0	40	10	0	50	0	100
基礎的能力	0	0	0	0	0	0	0
専門的能力	0	40	10	0	50	0	100
分野横断的能力	0	0	0	0	0	0	0

Tsuyama College	Year	2023	Course Title	Basic Practice in Information Processing Ⅰ

Course Information

Course Code	0012	Course Category	Specialized / Elective
Class Format	Lecture	Credits	School Credit: 1
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 1st
Term	First Semester	Classes per Week	2
Textbook and/or Teaching Materials	教科書：配布資料		
Instructor	TAKETANI Hisashi		

Course Objectives

学習目的：研究に活用できるプログラミング能力の向上，Webページの作成等のコンピュータリテラシー能力の向上。

到達目標：
1. 情報倫理を理解し、情報機器を有効に活用できる。
2. Webページの仕組みを理解し、各自のWebページを作製できる。
3. 各分野に適応できる情報分野に関する基礎知識を理解し，活用することができる。

Rubric

	優	良	可	不可
評価項目1	正しい情報倫理に基づき，情報機器を有効に活用できる。	情報倫理を理解し，情報機器を活用できる。	情報機器を活用できる。	左記に達していない。
評価項目2	Webページの仕組みを説明でき，有効に活用できる。	Webページを作製，公開することがる。	Webページを作製できる。	左記に達していない。
評価項目3	各分野に適応できる情報分野に関する知識を活用できる。	各分野に適応できる情報分野に関する基礎知識を具体的に説明できる。	各分野に適応できる情報分野に関する基礎知識の概要を説明できる。	左記に達していない。

Assigned Department Objectives

Teaching Method

Outline	一般・専門の別：専門 学習の分野：情報と計測・制御 基礎となる学問分野：総合領域/情報学/計算機システム・ネットワーク 専攻科学習目標との関連：本科目は専攻科学習目標「(1) 数学，物理を中心とした自然科学系の科目に関する知識を深め，人文・社会科学に関する知見を広めて，機械・制御システム工学および電子・情報システム工学に関する基礎学力として応用できる。」に相当する科目である。 技術者教育プログラムとの関連：本科目が主体とする学習・教育到達目標は「(Ａ)技術に関する知識理解の深化および情報技術の習得とそれらを応用することができる」であり、付随的に（C)に関連する。 授業の概要：IT時代といわれる今日，日常的な道具としてのコンピュータリテラシー能力の向上を目的に，電子メール，インターネット上の情報の活用，情報発信やプログラミングなど，コンピュータとネットワークの活用ができるように様々な操作法および情報倫理等利用時の心得など学ぶ。
Style	授業の方法：主に総合情報センターの応用演習室のパソコンで演習を行う。 成績評価方法：各課題へ対する理解と成果（レポートと作品）80%，発表20%
Notice	履修上の注意：本科目は「授業時間外の学修を必要とする科目」である。当該授業時間と授業時間外の学修を合わせて，１単位あたり４５時間の学修が必要である。授業時間外の学修については，担当教員の指示に従うこと。 履修のアドバイス： ・事前に行う準備学習として，各学科の情報処理技術に関連する科目および演習の内容を復習しておくこと ・後期に情報処理基礎演習Ⅱまたは情報処理応用演習Ⅱのいずれかの履修が可能です。 基礎科目：各学科の情報処理技術に関連する科目および演習 受講上のアドバイス：授業開始20分以内であれば遅刻とし，遅刻3回で1欠課とする。

Characteristics of Class / Division in Learning

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

選択

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	ガイダンス，総合情報センターのシステム構成	総合情報センターのシステム構成の理解
		2nd	ネットワーク利用の注意事項，電子メールの使用	ネットワーク利用の注意事項，電子メールの使用
		3rd	インターネットを利用する上での問題点に関する調査	インターネットを利用する上での問題点に関する調査
		4th	調査報告およびディスカッション	調査報告およびディスカッション
		5th	コンピュータ上で使用される漢字について	コンピュータ上で使用される漢字について
		6th	プログラミングの基礎（1）	プログラミングの基礎
		7th	プログラミングの基礎（2）	プログラミングの基礎
		8th	プログラミングの基礎（3）	プログラミングの基礎
	2nd Quarter	9th	プログラミングの基礎（4）	プログラミングの基礎
		10th	プログラミング課題（1）	プログラミング課題
		11th	プログラミング課題（2）	プログラミング課題

		12th	マークアップ言語について	マークアップ言語
		13th	簡単なホームページの作成	簡単なホームページの作成
		14th	各自の研究に関するホームページの作成（１）	各自の研究に関するホームページの作成
		15th	各自の研究に関するホームページの作成（２）	各自の研究に関するホームページの作成
		16th	動きのあるホームページ，CGI，音声、動画の再生	動きのあるホームページ，CGI，音声、動画の再生

Evaluation Method and Weight (%)

	試験	発表	相互評価	自己評価	課題	小テスト	Total
Subtotal	0	20	0	0	80	0	100
基礎的能力	0	0	0	0	0	0	0
専門的能力	0	20	0	0	80	0	100
分野横断的能力	0	0	0	0	0	0	0

Tsuyama College	Year	2023	Course Title	Practice in Information Processing Ⅰ

Course Information

Course Code	0013	Course Category	Specialized / Elective
Class Format	Lecture	Credits	School Credit: 1
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 1st
Term	First Semester	Classes per Week	2
Textbook and/or Teaching Materials			
Instructor	TERAMOTO Takayuki		

Course Objectives

学習目的：演習を通して情報処理技術を身につけるとともに，情報を判断したり評価するために必要な知識や技術を深化させる。

到達目標
1．各自の研究テーマについて必要となるドキュメントを作成することができる。
2．各自の研究テーマについて表計算ソフトを活用してデータ整理や有効なグラフが作成できる。
3．与えられた課題に対して問題を解決することができる。

Rubric

	優	良	可	不可
評価項目1	各自の研究テーマに関して学会に投稿するレベルのドキュメントが作成できる。	各自の研究テーマに関して学会のフォーマットに沿ったドキュメントが作成できる。	各自の研究テーマに関してフォーマット変更したドキュメントが作成できる。	各自の研究テーマに関して目的に合わせたドキュメントを作成する事ができない
評価項目2	各自の研究テーマに関して表計算ソフトを活用して論文に利用できるレベルでデータ整理や有効なグラフ作成ができる。	各自の研究テーマに関して表計算ソフトを活用して一般的なデータ整理や有効なグラフ作成ができる。	各自の研究テーマに関して表計算ソフトを活用してある程度データ整理や有効なグラフ作成ができる。	各自の研究テーマに関して表計算ソフトを活用しても目的のデータ整理やグラフの作成がおこなえない。
評価項目3	与えられた課題に対して，ソフトウェアを十分に駆使し，問題を解決することができる。	与えられた課題に対して，ソフトウェアを使用して問題を解決することができる。	与えられた課題に対して，ソフトウェアを使用して、課題を解決する方法を提案することができる。	与えられた課題に対して課題を解決すること，また解決する方法を提案することができない。

Assigned Department Objectives

Teaching Method

Outline	一般・専門の別：専門 学習の分野：情報・制御 基礎となる学問分野：情報科学，情報工学およびその関連分野／統計科学関連，計算機システム関連，ソフトウェア関連 専攻科学習目標との関連：本科目は専攻科学習目標「(1) 数学，物理を中心とした自然科学系の科目に関する知識を深め，人文・社会科学に関する知見を広めて，機械・制御システム工学および電子・情報システム工学に関する基礎学力として応用できる。」に相当する科目である。 技術者教育プログラムとの関連：本科目が主体とする学習・教育到達目標は「（A）技術に関する基礎知識の深化および情報技術の習得とそれらを応用することができる」であり、付随的に（C)に関連する。 授業の概要：IT技術を利用した情報の検索，整理，管理統合，プレゼンテーション，情報発信などは現代の技術者のリテラシー能力である。本演習では，すでに基本的なリテラシー能力を習得した学生を対象に，さらに高度な応用技術やカスタマイズ能力，表現力を身につけるための演習を行う。
Style	授業の方法：演習を中心に授業を進める。情報処理に必要とされる知識全般が習得できるよう演習を進める。また，理解が深まるようレポートを課す。さらにまとめた情報を整理発表できるようプレゼンテーションや発表を行う。 成績評価方法：演習の計画性と実施状況，課題の提出状況　５０%， プレゼンテーションと議論への参加態度　４０% 発表・提出された課題を学生が相互に評価した結果　１０%
Notice	履修上の注意：本科目は「授業時間外の学修を必要とする科目」である。当該授業時間と授業時間外の学修を合わせて，１単位あたり４５時間の学修が必要である。授業時間外の学修については，担当教員の指示に従うこと。 履修のアドバイス：情報処理基礎演習Ⅰと同時に履修する事はできないが，情報処理基礎演習Ⅱもしくは情報処理応用演習Ⅱを履修することは可能。 事前に行う準備学習として、所属する学会の論文に関する情報を調査しておくこと。また，演習室の利用方法を復習しておくこと。 基礎科目：各学科の情報処理に関連する科目および演習 関連科目：工学倫理（専1年），情報処理応用演習Ⅱ（専1年），情報処理基礎演習Ⅱ（専１年） 受講上のアドバイス：内容はそれぞれ独立しており，どこからでも自学独習ができるような構成になっている。科目の性格上，必ずしもすべての項目にわたって精通する必要はないが，技術者が報告書や論文を作成する場合や学会発表を行う際に必要な情報処理技術が中心となっている。自分のテーマにあわせて必要部分を深化させてほしい。演習環境に慣れると同時に，各研究室でも同様の演習が行える環境を整備する努力が必要である。 遅刻の扱い：授業開始時の出席確認以降の入室は遅刻として扱う。なお，1時限の半分の時間経過後は欠課として扱う。

Characteristics of Class / Division in Learning

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

選択

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	概要説明および情報処理基礎演習Ｉとの情報交換〔ガイダンス〕	概要を理解する
		2nd	演習システムへの登録作業及び個人情報・演習環境の設定作業〔設定〕	演習環境を設定し、演習を始める事ができる
		3rd	ドキュメント作成の基礎技術（書式設定，文書スタイルの統一）の修得のための演習。	ドキュメント作成の基礎技術（書式設定，文書スタイルの統一）を理解し、演習でその内容を確認する
		4th	ドキュメント作成の基礎技術（相互参照）の修得のための演習。	ドキュメント作成の基礎技術（相互参照）を理解し、演習でその内容を確認する
		5th	ドキュメント作成の基礎技術（画像処理等）の修得のための演習。	ドキュメント作成の基礎技術（画像処理等）を理解し、演習でその内容を確認する
		6th	業務フローの作成演習。	業務フローの作成を理解し、演習でその内容を確認する
		7th	ＰＤＦファイルの作成などフリーソフトウェアによる演習。	ＰＤＦファイルの作成などフリーソフトウェアを理解し、演習でその内容を確認する
		8th	表計算ソフトの基本技術の演習ならびにマクロ言語の演習①	表計算ソフトの基本技術の演習ならびにマクロ言語の演習①を理解し、演習でその内容を確認する
	2nd Quarter	9th	表計算ソフトの基本技術の演習ならびにマクロ言語の演習②	表計算ソフトの基本技術の演習ならびにマクロ言語の演習②を理解し、演習でその内容を確認する
		10th	表計算ソフトの応用例題の演習①	表計算ソフトの応用例題の演習①を理解し、演習でその内容を確認する
		11th	表計算ソフトの応用例題の演習②	表計算ソフトの応用例題の演習②を理解し、演習でその内容を確認する
		12th	表計算ソフトの応用例題の演習③	表計算ソフトの応用例題の演習③を理解し、演習でその内容を確認する
		13th	総合的な課題の作成と発表①	総合的な発表を行い理解を確認し相互に評価する①
		14th	総合的な課題の作成と発表②	総合的な発表を行い理解を確認し相互に評価する②
		15th		
		16th		

Evaluation Method and Weight (%)

	試験	プレゼンテーション	相互評価	自己評価	課題	小テスト	Total
Subtotal	0	40	10	0	50	0	100
基礎的能力	0	0	0	0	0	0	0
専門的能力	0	40	10	0	50	0	100
分野横断的能力	0	0	0	0	0	0	0

Tsuyama College	Year	2023	Course Title	Basic Practice in Information Processing Ⅱ

Course Information

Course Code	0014	Course Category	Specialized / Elective
Class Format	Lecture	Credits	School Credit: 1
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 1st
Term	Second Semester	Classes per Week	2
Textbook and/or Teaching Materials	教科書：配布資料		
Instructor	TAKETANI Hisashi		

Course Objectives

学習目的：
UNIXの体系やコマンドの基本やシェルスクリプトを修得する。
Visio(高度な機能を持つ図形作成ソフト)の初級習得

到達目標：
1. UNIXの基礎を習得し，プログラミング環境を課題解決に活用できる。
2. 数式処理ソフトおよび物理シミュレーションソフトを活用することができる。。
3. Visioで電気回路，ネットワーク図などが作成できる。

Rubric

	優	良	可	不可
評価項目1	UNIX環境を課題解決に有効利用できる。	UNIXの基礎を修得し，プログラミング環境を活用できる。	UNIX上でのプログラミング環境を利用できる。	左記に達していない。
評価項目2	適切なソフトを活用して，課題解決ができる。	数式処理ソフトおよび物理シミュレーションソフトを活用することができる。	数式処理ソフトおよび物理シミュレーションソフトを利用することができる。	左記に達していない。
評価項目3	VISIOを各自の課題解決に活用できる。	VISIOを用いて電気回路およびネットワーク図などを作図できる。	VISIOを用いて基本的な電気回路およびネットワーク図などを作図できる。	左記に達していない。

Assigned Department Objectives

Teaching Method

Outline	一般・専門の別：専門 学習の分野：情報と計測・制御 基礎となる学問分野：総合領域/情報学/計算機システム・ネットワーク 専攻科学習目標との関連：本科目は専攻科学習目標「(1) 数学，物理を中心とした自然科学系の科目に関する知識を深め，人文・社会科学に関する知見を広めて，機械・制御システム工学および電子・情報システム工学に関する基礎学力として応用できる。」に相当する科目である。 技術者教育プログラムとの関連：本科目が主体とする学習・教育到達目標は「(A)技術に関する知識理解の深化および情報技術の習得とそれらを応用することができる」であり、付随的に（C)に関連する。 授業の概要：情報処理基礎演習Iあるいは情報処理応用演習Iにおいて学修したコンピュータリテラシー能力を基礎として，学修や研究の場でのより高度なコンピュータ技術の基礎となるUNIXの体系やコマンドの基本的な技術について理解する。また，シェルスクリプトについても学ぶ。
Style	授業の概要：情報処理基礎演習Iあるいは情報処理応用演習Iにおいて学修したコンピュータリテラシー能力を基礎として，学修や研究の場でのより高度なコンピュータ技術の基礎となるUNIXの体系やコマンドの基本的な技術について理解する。また，シェルスクリプトについても学ぶ。 成績評価方法：各課題へ対する理解と成果（レポートと作品）80%+発表(相互評価）20%
Notice	履修上の注意：本科目は「授業時間外の学修を必要とする科目」である。当該授業時間と授業時間外の学修を合わせて，１単位あたり４５時間の学修が必要である。授業時間外の学修については，担当教員の指示に従うこと。 履修のアドバイス： ・事前に行う準備学習として，情報処理基礎演習Ⅰ，情報処理応用演習Ⅰの内容を復習しておくこと。 ・前期に情報処理基礎演習Ⅱあるいは情報処理応用演習Ⅱのどちらを履修していても履修できます。 基礎科目：情報処理基礎演習Ⅰ（専１年）あるいは情報処理応用演習Ⅰ（専１） 受講上のアドバイス：授業開始20分以内であれば遅刻とし，遅刻3回で1欠課とする。

Characteristics of Class / Division in Learning

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

選択

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	ガイダンス	
		2nd	数式処理ソフトmaxima	数式処理ソフトmaximaの基礎
		3rd	maximaによる数式処理 方程式，連立方程式，行列，微積分	maximaによる数式処理 方程式，連立方程式，行列，微積分
		4th	Phunによる物理シミュレーション（１）	Phunによる物理シミュレーションの基礎
		5th	Phunによる物理シミュレーション（２）	Phunによる物理シミュレーション
		6th	物理シミュレーション報告会	物理シミュレーション報告会

		7th	CentoOS入門	CentoOS入門
		8th	CentoOS上での環境整備	CentoOS上での環境整備
	4th Quarter	9th	CentoOS上でのCプログラミング（1）	CentoOS上でのCプログラミング
		10th	CentoOS上でのCプログラミング（2）	CentoOS上でのCプログラミング
		11th	CentoOS上でのCプログラミング（3）	CentoOS上でのCプログラミング
		12th	Unixに関する基礎知識，ジョブ制御，シェル	Unixに関する基礎知識，ジョブ制御，シェル
		13th	ファイルシステム，各種コマンド	ファイルシステム，各種コマンド
		14th	CentoOSによるシェルプログラミング	CentoOSによるシェルプログラミング
		15th	シェルによるファイル操作	シェルによるファイル操作
		16th	Visioの基本操作	Visioの基本操作

Evaluation Method and Weight (%)

	試験	発表	相互評価	自己評価	課題	小テスト	Total
Subtotal	0	20	0	0	80	0	100
基礎的能力	0	0	0	0	0	0	0
専門的能力	0	20	0	0	80	0	100
分野横断的能力	0	0	0	0	0	0	0

Tsuyama College	Year	2023	Course Title	Practice in Information Processing Ⅱ

Course Information

Course Code	0015	Course Category	Specialized / Elective
Class Format	Lecture	Credits	School Credit: 1
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 1st
Term	Second Semester	Classes per Week	2
Textbook and/or Teaching Materials			
Instructor	TERAMOTO Takayuki		

Course Objectives

学習目的：実習を通して情報処理技術を身につけるとともに，情報を判断したり評価するために必要な知識や技術をさらに深化させる。

到達目標
1．組み版システムを理解し，必要なドキュメントを作成することができる。
2．組み版システムを利用するためのマニュアルを作成し，他人に使い方を説明することができる。
3．論文等で作成する回路図やフローチャート・ガントチャート等を適切に作成することができる。

Rubric

	優	良	可	不可
評価項目1	組み版システムを理解し，学会に投稿できるレベルでドキュメントを作成することができる。	組み版システムを理解し，一般的なドキュメントを作成することができる。	組み版システムを理解し，必要なドキュメントをある程度作成することができる。	目的に合わせたドキュメントを作成する事ができない。
評価項目2	組み版システムを利用するためのマニュアルを作成し，他人に使い方を十分説明することができる。	組み版システムを利用するためのマニュアルを作成し，他人に使い方をある程度説明することができる。	組み版システムを利用するためのマニュアルを作成しすることができる。	組み版システムを利用するためのマニュアルを作成しすることができない。
評価項目3	与えられた課題に対して，回路図やフローチャート・ガントチャート等を適切に作成することができる。	与えられた課題に対して，回路図やフローチャート・ガントチャート等をある程度作成することができる。	与えられた課題に対して，回路図やフローチャート・ガントチャート等のいずれかを作成することができる。	与えられた課題に対して，回路図やフローチャート・ガントチャート等を作成することができない。

Assigned Department Objectives

Teaching Method

Outline	一般・専門の別：専門 学習の分野：情報・制御 基礎となる学問分野：情報科学、情報工学およびその関連分野／統計科学関連，計算機システム関連，ソフトウェア関連 専攻科学習目標との関連：本科目は専攻科学習目標「(1) 数学，物理を中心とした自然科学系の科目に関する知識を深め，人文・社会科学に関する知見を広めて，機械・制御システム工学および電子・情報システム工学に関する基礎学力として応用できる。」に相当する科目である。 技術者教育プログラムとの関連：本科目が主体とする学習・教育到達目標は「（A）技術に関する基礎知識の深化および情報技術の習得とそれらを応用することができる」であり、付随的に（C)に関連する。 授業の概要：本演習では，すでに基本的なコンピュータリテラシー能力を習得した学生を対象に，さらに高度なシステム管理能力や初学者への指導力，そして表現力を身につけるための演習を行う。
Style	授業の方法：演習を中心に授業を進める。情報処理に必要とされる知識全般が習得できるよう演習を進める。また，理解が深まるようレポートを課す。 成績評価方法：演習の計画性と実施状況，課題の提出状況　５０%, プレゼンテーションと議論への参加態度　４０% 発表・提出された課題を学生が相互に評価した結果　１０%
Notice	履修上の注意：本科目は「授業時間外の学修を必要とする科目」である。当該授業時間と授業時間外の学修を合わせて，１単位あたり４５時間の学修が必要である。授業時間外の学修については，担当教員の指示に従うこと。 履修のアドバイス：情報処理基礎演習Ⅰと同時に履修する事はできないが，情報処理基礎演習Ⅱもしくは情報処理応用演習Ⅱを履修することは可能。 事前に行う準備学習として、TeXシステムの環境構築に関して事前調査をしておく。 基礎科目：各学科の情報処理に関連する科目および演習 関連科目：工学倫理（専1年），情報処理応用演習Ⅰ（専1年），情報処理基礎演習Ⅰ（専１年） 受講上のアドバイス：コンピュータ・ネットワーク等に関する指導的・管理的役割を担える技術者を目指すこと。自主的に課題を見つけるテーマが多いので日頃から広く技術動向に注意を払っておくこと。科目の性格上，必ずしもすべての項目にわたって精通する必要はないが，技術者が情報収集や学会発表を行う際に必要な情報処理技術を中心に演習を行う。 遅刻の扱い：授業開始時の出席確認以降の入室は遅刻として扱う。なお，1時限の半分の時間経過後は欠課として扱う。

Characteristics of Class / Division in Learning

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

選択

Course Plan

			Theme	Goals

2nd Semester	3rd Quarter	1st	概要説明〔ガイダンス〕	概要を理解する
		2nd	TeXシステムの概要説明と学習環境の構築と演習①	TeXシステムを理解し演習環境を構築することができる
		3rd	TeXシステムの概要説明と学習環境の構築と演習②	TeXシステムを理解し演習環境を構築することができる
		4th	組み版システムの歴史と技術に関する学習	組み版システムの歴史と技術を理解し演習で内容を確認することができる
		5th	メタフォント並びにポストスクリプトフォントや画像ファイル（EPS他）の取り扱いに関する演習	メタフォント並びにポストスクリプトフォントや画像ファイル（EPS他）の取り扱いを理解し演習で内容を確認することができる
		6th	jLaTeXマニュアル作成演習①	jLaTeXマニュアルを理解し演習で内容を確認することができる
		7th	jLaTeXマニュアル作成演習②	jLaTeXマニュアルを理解し演習で内容を確認することができる
		8th	jLaTeXマニュアル作成演習③	jLaTeXマニュアルを理解し演習で内容を確認することができる
	4th Quarter	9th	jLaTeXマニュアル作成演習④	jLaTeXマニュアルを理解し演習で内容を確認することができる
		10th	Visioによるフローチャートや各種設計図の作成①	Visioによるフローチャートや各種設計図の作成を理解し演習で内容を確認することができる
		11th	Visioによるフローチャートや各種設計図の作成②	Visioによるフローチャートや各種設計図の作成を理解し演習で内容を確認することができる
		12th	Visioによる各種設計図の講義準備	Visioによる各種設計図を理解し演習で内容を確認することができる
		13th	Visioによる各種設計図の講義	Visioによる各種設計図を理解し他人に説明できる
		14th	Visioによる各種設計図の講義	Visioによる各種設計図を理解し他人に説明できる
		15th		
		16th	演習のまとめと相互評価を行う	

Evaluation Method and Weight (%)

	試験	プレゼンテーション	相互評価	自己評価	課題	小テスト	Total
Subtotal	0	40	10	0	50	0	100
基礎的能力	0	0	0	0	0	0	0
専門的能力	0	40	10	0	50	0	100
分野横断的能力	0	0	0	0	0	0	0

Tsuyama College	Year	2023	Course Title	Computer System Engineering

Course Information

Course Code	0016	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 1st
Term	Second Semester	Classes per Week	2
Textbook and/or Teaching Materials	Textbook: Ken Kasuga and Yuji Tateizumi, "Computer System (written in Japanese)" Corona Publishing		
Instructor	MIYASHITA Takuya		

Course Objectives

Learning purposes : Understand the structure of a computer and the functions of the components actually used, and understand the main technologies used in it. In addition, be able to explain the correspondence between logical formulas and logic circuits, and be able to design logic circuits.

Course Objectives :
1. Explain the role of each of the five major devices and the flow of data between them.
2. A simple combination logic circuit and a simple sequential circuit can be designed.
3. Explain the position of the operating system in the computer system.
4. Explain the role and mechanism of the compiler.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	Explain the roles of each of the five major devices, including peripheral devices, and the flow of data between them.	Explain the role of each of the five major devices and the flow of data between them.	A brief explanation can be given for each of the five major devices.	It has not reached the left.
Achievement 2	It is possible to design applied combination logic circuits and simple sequential circuits.	A simple combination logic circuit and a simple sequential circuit can be designed.	Explain the operation of a given simple combinational circuit.	It has not reached the left.
Achievement 3	Explain concretely the functions and roles of the operating system in computer systems.	Explain the position of the operating system.	Explain the operating system, albeit with minor mistakes.	It has not reached the left.
Achievement 4	Explain programming using a compiler in detail.	Be able to give an overview of the role and mechanism of the compiler.	Explain the differences between compilers, interpreters, and assemblers.	It has not reached the left.

Assigned Department Objectives

Teaching Method

Outline	General or Specialized : Specialized Field of learning : Information system, control Foundational academic disciplines : Informatics / Information Science, Information Engineering and Related Fields / Computer Systems Related. Relationship with Educational Objectives : This class is equivalent to "(2) Acquire knowledge in specialized technical fields related to electricity / electronics and information / control, and acquire the ability to utilize it for the design, manufacture, and operation of machines and systems". Relationship with JABEE programs : The main goal of learning / education in this class are "(B)". Course outline : Lectures will be given on basic technology related to software and basic knowledge on hardware such as logical formulas and logic circuits.
Style	Course method : Classes will be conducted using textbooks, centered on board writing. In addition, related technologies will be supplementarily explained as necessary. Also, impose exercises to deepen understanding. Grade evaluation method : Equally evaluate the results of the two regular exams (80%, mid-term exams: final exams = 1:1). ・Each exam does not allow notebooks to be brought in. ・For those who have less than 60 points in each Regular Exams, the points may be changed if their understanding can be confirmed by supplementary lessons and re-exams. However, the evaluation after the change shall not exceed 60 points. Evaluate by exercises and reports assignment (20%).

Notice	Precautions on the enrollment : This is a class that requires study outside of class hours. A total of 45 hours of study is required per credit, including both class time and study outside class time. Follow the instructions of the instructor regarding study outside of class hours. Course advice : There are many contents related to fields other than your own specialty, but you should study with interest in order to broaden your horizons as an engineer. Make sure to check the contents of the basic subjects listed as preparatory learning in advance. Foundational subjects : Electronic Information Circuit (3rd year of electrical and electronic), Special Theory of Electronic Information Circuit (5th year of electrical and electronic), Introduction of Computer (3rd year of information), Digital Engineering I (2nd year of information), Digital Engineering II (3rd year of information), etc. Related subjects : Information System Exercise I, II (2nd year), Special Lecture on Numerical Analysis (2nd year). Attendance advice : The content of the study is something that has already been learned in this department, but I would like you to think deeply and learn the essence rather than superficial shallow learning and understanding. Late arrivals are handled in 1/4 (= 0.5 hour) of class time (= 2 hour).

Characteristics of Class / Division in Learning

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

Elective subjects

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Guidance, computer overview Learning content outside class hours: Report assignments are assigned to each learning content as appropriate. The report must be submitted by the specified date.	Understand the purpose of education, learning content, evaluation method, etc. Also, understand the outline of computers.
		2nd	Data representation on a computer	Understand how to convert and handle binary numbers.
		3rd	Boolean algebra and digital circuits (1)	Understand simple combination logic circuits.
		4th	Boolean algebra and digital circuits (2)	Understand simple combination logic circuits.
		5th	Binary arithmetic and arithmetic circuits	Understand binary adders and subtractors.
		6th	Microprocessor architecture	Understand the instruction set of microprocessors.
		7th	Microprocessor instructions and addressing	Understand various addressing.
		8th	Memory	Understand the types and characteristics of memory.
	4th Quarter	9th	2nd semester mid-term exam	Check what you have learned so far
		10th	Interface	Understand the connection relationship between computers and peripheral devices.
		11th	Peripherals	Understand peripheral devices based on specific examples.
		12th	Software	Understand the structure and features of software.
		13th	Network	Understand the outline of the network based on the IP address and so on.
		14th	Computer System	Analytical understanding of the relationship between failure rate and system reliability.
		15th	(2nd semester final exam)	Check what you have learned so far
		16th	Return and commentary of exam answers	Check and repair areas where learning is insufficient

Evaluation Method and Weight (%)

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

Tsuyama College	Year	2023	Course Title	Special Lecture on Information Systems

Course Information

Course Code	0017	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 1st
Term	First Semester	Classes per Week	2
Textbook and/or Teaching Materials	Teaching Materials: books, online resources and so on that the students find		
Instructor	ONISHI Atsushi		

Course Objectives

Learning purposes :
Improving skill to utilize information and the information systems appropriately and safely by understanding the structure of the familiar information systems.

Course objectives :
1. To investigate the given probrem and to explain findings clearly
2. To understand what another students explained and to utilize them appropriately
3. To explain the picture of the information system what the students use and to utilize it appropriately

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	The student can investigate the given problem without an error, and he can announce findings at the time when it was appointed.	The student can investigate the given problem with help of another students, and he can finally announce findings enough.	The student can conduct the minimum investigation about the given problem and explain findings.	The student can't conduct the minimum investigation about the given problem or he can't announce the minimum.
Achievement 2	The student attend the announcement of other students and he can ask appropriate questions and he can utilize their announcement for own investigation.	The student attend the announcement of other students and he can utilize their announcement for own investigation.	The student can do the announcement that is not in conflict with announcement of other students.	The student can't do the announcement that is not in conflict with announcement of other students.
Achievement 3	The student can investigate the designated information system exhaustively.	The student can investigate the designated information system enough.	The student can conduct the minimum investigation about the designated information system.	The student can't investigate the minimum about the designated information system.

Assigned Department Objectives

Teaching Method

Outline	General or Specialized : Specialized Field of learning : Information·Control, Information System·Programming·Network Foundational academic disciplines : Information Science, Computer Engineering and related fields / Comupter system-related, Information network-related Relationship with Educational Objectives : This class is equivalent to "(2) Acquire the specialized technical knowledge about electronics, information·control and acquire the skill to utilize these knowledge to design, manufacture and application of machinery or some system". Relationship with JABEE programs : The main goal of learning / education in this class are "(A), A-1", also "B-1" is involved. Course outline : The information system is aggregate of a lot of techniques and it is related to the scene of every learning. This class treats a technique to build such a complicated information system appropriately and a basic way of thinking to utilize a information system.
Style	Course method : The students don't hear the lecture that the teacher performs but investigate the designated problems about some information system based on own leaning and announce findings. And the students deepen understanding by summarizing these findings in a report. The reports are shared among the students. The examples of the problem are as follows. The component of the PC and expansion method of PC function The peripheral device of the PC and standard for the connection The duty of the operating system and the characteristic of each operating system The trends of VR, AR, MR system The personal identification method The trends of the cloud service The trends of the computer security Grade evaluation method : Aggressiveness for the investigation and the announcement(50%) + Reports(50%)

Notice	Precautions on the enrollment : This is a class that requires study outside of class hours. A total of 45 hours of study is required per credit, including both class time and study outside class time. Follow the instructions of the instructor regarding study outside of class hours. Cource advice : As a preparatory study, the students are required to review the learning about computers that the students have gotten previously. And the students should pay attention to news about information-oriented society. The student shuld teach own charge for other students with every effort . Fundational subjects : Information Literacy(1st year), Introduction to Computers(3rd), Computer System(5th) Related subjects : Computer System Engineering(Advanced Cource 1st) Attendance advice : When the student is absent, he should share the missing contents with other students, because the student is required to hear the all announcement of other students. If absence is over four hours, the students are assigned to the examination to check whether they share the missing contents. If the examination is failure, all report will not be accepted. If the student is late for the role call, he will be treated as a latecomer. The teacher considers that ths student was absent once when late twice. In this class, it is required for every communication to use the computer network. The student should contact the teacher if he has any question. The students should be always conscious of connection with own information system while hearing the class.

Characteristics of Class / Division in Learning

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

Elective subjects

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance, Investigation and Report generation	Selection of the own problem
		2nd	Explanation of the investigation contents and Q&A, Investigation and Report generation	Completion of the 1st announcement of the precedent group
		3rd	Explanation of the investigation contents and Q&A, Investigation and Report generation	Completion of the 1st announcement of the rear group
		4th	Explanation of the investigation contents and Q&A, Investigation and Report generation	Completion of the 2nd announcement of the precedent group
		5th	Explanation of the investigation contents and Q&A, Investigation and Report generation	Completion of the 2nd announcement of the rear group
		6th	Explanation of the investigation contents and Q&A, Investigation and Report generation	Completion of the 3rd announcement of the precedent group
		7th	Explanation of the investigation contents and Q&A, Investigation and Report generation	Completion of the 3rd announcement of the rear group
		8th	Explanation of the investigation contents and Q&A, Investigation and Report generation	Completion of the 4th announcement of the precedent group
	2nd Quarter	9th	Explanation of the investigation contents and Q&A, Investigation and Report generation	Completion of the 4th announcement of the rear group
		10th	Explanation of the investigation contents and Q&A, Investigation and Report generation	Completion of the 5th announcement of the precedent group
		11th	Explanation of the investigation contents and Q&A, Investigation and Report generation	Completion of the 5th announcement of the rear group
		12th	Explanation of the investigation contents and Q&A, Investigation and Report generation	Completion of the final announcement of the precedent group
		13th	Explanation of the investigation contents and Q&A, Investigation and Report generation	Completion of the final announcement of the rear group
		14th	Explanation of the investigation contents and Q&A, Investigation and Final report generation	Confirmation of the design about the final report
		15th	Explanation of the investigation contents and Q&A, Investigation and Final report generation	Confirmation of the process about the final report, Carring out the confirmation examination
		16th	Summary, supplementary, commentary	Completion of the collection of the reports, results confirmation

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Report	Other	Total
Subtotal	0	50	0	0	50	0	100
Basic Proficiency	0	0	0	0	0	0	0
Specialized Proficiency	0	25	0	0	25	0	50
Cross Area Proficiency	0	25	0	0	25	0	50

Tsuyama College	Year	2023	Course Title	Linear Algebra

Course Information

Course Code	0018	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 1st
Term	First Semester	Classes per Week	2
Textbook and/or Teaching Materials	Introduction to Abstract Algebra Starting from Vector Spaces, Osamu Matsuda, Morikita Publishing		
Instructor	MATSUDA Osamu		

Course Objectives

Learning purposes : In this course, you will learn the theory of n-dimensional number vector space. In particular, learn new concepts such as Jordan normal form, quaternions, and groups.
Acquire the basic idea of the theory of n-dimensional number vector space.

Course Objectives :
1. 1. Understand n-dimensional number vector space.
2. Understand the concept of inner product and distance.
3. Geometrically explain the difference in space deformation depending on the type of matrix.
4. Explain the representation matrix and the change of basis.
5. Understand the concept of Jordan normal form.
6. Understand quaternions and the rotation of space.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	A good understanding of n-dimensional number vector spaces.	Understand about 70% of the n-dimensional number vector space.	Understand about 60% of the n-dimensional number vector space.	Don't understand the n-dimensional number vector space.
Achievement 2	A good understanding of inner product and distance.	About 70% have an understanding of inner product and distance.	About 60% have an understanding of inner product and distance.	Don't understand the inner product and distance.
Achievement 3	It is possible to explain the difference in the deformation of space depending on the type of matrix geometrically and precisely.	Geometrically, about 70% of the differences in spatial deformation depending on the type of matrix can be explained.	Geometrically, about 60% of the differences in spatial deformation depending on the type of matrix can be explained.	It is not possible to geometrically explain the difference in the deformation of space depending on the type of matrix.
Achievement 4	Explain the representation matrix and the basis basis precisely.	Explain about 70% of representation matrices and basis transformations.	Explain about 60% of representation matrices and basis transformations.	Can't explain the representation matrix and the change of basis.
Achievement 5	The idea of Jordan normal form is well understood.	About 70% of the Jordan normal form is known.	About 60% of the Jordan normal form is known.	Don't understand the idea of Jordan normal form.
Achievement 6	A good understanding of quaternions and the rotation of space.	Understand about 70% of quaternions and the rotation of space.	Understand about 60% of quaternions and the rotation of space.	Don't understand the quaternion and the rotation of space.

Assigned Department Objectives

Teaching Method

Outline	General or Specialized : Specialized Field of learning : Natural science Common / Basic Required, Elective: Elective must complete subjects Foundational academic disciplines : Mathematical science / Mathematics / Analysis basics Relationship with Educational Objectives : This subject corresponds to the learning goal "(2) Acquire basic science and technical knowledge". Relationship with JABEE programs : The main goal of learning / education in this class are "(A) , A-1". Class Outline: In Applied Mathematics I, you will learn the basics of probability theory and statistics. In probability theory, we look at the theory of distributions (binomial distribution, Poisson distribution, normal distribution) and the central limit theorem, which are important in statistical processing. Learn the equations of correlation and regression line as an arrangement of two-variable data. Finally, learn how to estimate and test the population.
Style	Course method : Focus on understanding the content on the board, and assign as many exercises as possible to deepen understanding. Grade evaluation method : 4 regular exams (50%) and other exams, exercises, reports and effort of class(50%). etc, Re-examination: During supplementary lessons at the end of the first semester, students with a score of 59 points or less will be given a re-examination.
Notice	Precautions on enrollment : Students must take this class (no more than one-third of the required number of class hours missed) in order to complete the academic year. Course advice: In this course, students will spiral up the content of basic linear algebra and differential equations learned in the main course. Foundational subjects : Fundamental Mathematics (1st year), Fundamental Linear Algebra (2nd), Differential and Integral Ⅰ(2nd), Differential and Integral Ⅱ (3rd), Differential Equations (3rd) Related subjects: Mathematics, physics, and other subjects after the third year Attendance advice : If you are late after, you may be treated as absent after a warning. Preparatory study in advance: Read the units of the text that you will be studying that week.

Characteristics of Class / Division in Learning

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

Elective subjects

Course Plan				
			Theme	Goals
1st Semester	1st Quarter	1st	Guidance	
		2nd	n-dimensional space number vector space	Understanding the definition of n-dimensional space number vector space
		3rd	Dot product and Gram-Schmidt orthogonalization method	Understanding the definition of inner product and understanding Gram-Schmidt's orthogonalization method
		4th	Transformation of space by matrix Part 1	Understanding the deformation of space by a matrix Part 1
		5th	Transformation of space by matrix Part 2	Understanding the deformation of space by a matrix Part 2
		6th	Relationship between representation matrix and coordinates	Understanding the relationship between the representation matrix and coordinates
		7th	Dimension theorem	Understanding the dimensional theorem
		8th	Mid-term exam	Confirm basic matters
	2nd Quarter	9th	Jordan normal form part 1	Understanding Jordan Normal Form Part 1
		10th	Jordan normal form part 2	Understanding Jordan Normal Form Part 2
		11th	Jordan decomposition 1 part 1	Understanding of Jordan Decomposition 1 Part 1
		12th	Jordan decomposition 1 part 2	Understanding of Jordan Decomposition 1 Part 2
		13th	Complex numbers and quaternions	Understanding complex numbers and quaternions
		14th	Quaternion and rotation	Understanding quaternions and rotations
		15th	Last term exam	Confirm basic matters
		16th	Return of answer and explanation of answer	

Evaluation Method and Weight (%)

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

Tsuyama College	Year	2023	Course Title	Environmental Science Theory

Course Information

Course Code	0019	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 1st
Term	Second Semester	Classes per Week	2
Textbook and/or Teaching Materials	教科書： 教科書：Barron's "Environmental Science, 2022-2023"		
Instructor	YAMADA Takafumi		

Course Objectives

学習目的：地球環境問題の現状と対策を理解する。また，プレゼンテーションやレポートを通じて，種々の学問・技術の総合応用力，複眼的思考による問題設定能力，公衆の健康・安全，倫理等の観点から問題点を認識する能力を養う。

到達目標：
１．地球の気候区分と生態系について理解し，説明できる
２．人口の増減のメカニズムや社会の発展にともなう年齢別人口構成の変遷について理解し、説明ができる
３．地球環境と資源、エネルギー消費について理解し、説明できる
４．環境汚染・気候変動について理解し、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	最低到達レベルの目安(可)	未到達レベルの目安
評価項目1	地球の気候区分と生態系について理解し，説明することがよくできる。	地球の気候区分と生態系について理解し，説明することができる。	地球の気候区分と生態系について理解し，説明することが概ねできる。	地球の気候区分と生態系について理解し，説明することができない。
評価項目2	人口の増減のメカニズムや社会の発展にともなう年齢別人口構成の変遷について理解し、説明することがよくできる。	人口の増減のメカニズムや社会の発展にともなう年齢別人口構成の変遷について理解し、説明することができる。	人口の増減のメカニズムや社会の発展にともなう年齢別人口構成の変遷について理解し、説明することがが概ねできる。	人口の増減のメカニズムや社会の発展にともなう年齢別人口構成の変遷について理解し、説明することができない。
評価項目3	地球環境と資源、エネルギー消費について理解し、説明することがよくできる。	地球環境と資源、エネルギー消費について理解し、説明することができる。	地球環境と資源、エネルギー消費について理解し、説明することが概ねできる。	地球環境と資源、エネルギー消費について理解し、説明することができない。
評価項目4	環境汚染・気候変動について理解し、説明することがよくできる。	環境汚染・気候変動について理解し、説明することができる。	環境汚染・気候変動について理解し、説明することが概ねできる。	環境汚染・気候変動について理解し、説明することができない。

Assigned Department Objectives

Teaching Method

Outline

※実務との関係：
この科目は、航空機メーカーで自衛隊機や旅客機の開発経験のある教員が、その経験を活かし、社会的な背景や環境技術の現状と課題を踏まえつつ、地球の気候区分や生態系、人口問題、地球環境と資源、環境汚染、気候変動などについて，授業を行うものである。

一般・専門の別：専門

学習の分野：自然科学系基礎・共通

基礎となる学問分野：理工系/工学/総合工学/地球・資源システム工学

専攻科学習目標との関連：
本科目は専攻科学習目標「(１) 数学，物理を中心とした自然科学系の科目に関する知識を深め，人文・社会科学に関する知見を広めて，機械・制御システム工学および電子・情報システム工学に関する基礎学力として応用できる。」に相当する科目である。

技術者教育プログラムとの関連：
本科目が主体とする学習・教育到達目標は「(F) 地球的視点から多面的に物事を考えることができ，地域との連携による総合能力の展開ができる」であり、付随的に(A)に関連する。

授業の概要：
地球上の気候区分や生態系，人口・エネルギー問題や環境汚染．気候変動などについて幅広く学習する。テキストは，アメリカで実際に教科書として用いられている洋書を用いる。

Style

授業の方法：
毎回、担当グループが教科書の担当ページについて内容についてまとめ、スライドを作成して発表を行う。その際、ただ教科書の内容を和訳してまとめるだけではなく、出席者の理解を容易にするために、教科書以外の文献や統計資料なども積極的に参考にして欲しい。プレゼンテーション終了後に質疑応答の時間を設けるので、活発な議論が行われることを期待する。授業の最後に、教科書の該当部分について簡単な問題演習を行い、その時間のレポートとして提出してもらう。

成績評価方法：
試験は実施しない。
毎回の授業で、発表内容（２０%）、スライド内容（２０%）、議論への参加（２０%）および問題演習（４０%）について点数化し、これらの平均点によって成績評価を行う。
正当な理由なく授業を欠席した場合、その回の評価は０点となり、成績評価に大きく影響を与えることがあるので注意すること。
全授業終了後の評価点が６０点未満の者には、出席状況や授業態度が良好であれば、別途課題を課すことで再度評価を行う。その際は、上限を６０点として，全授業終了後の評価点と読み替える。

Notice	履修上の注意： 本科目は「授業時間外の学修を必要とする科目」である。当該授業時間と授業時間外の学修を合わせて，１単位あたり４５時間の学修が必要である。授業時間外の学修については，担当教員の指示に従うこと。 履修のアドバイス： 事前に行う準備学習として、基礎科目となる本科の環境科学の内容の復習に加え、最新の環境に関する情報、データ、時事ニュースに関心を持ち、随時閲覧して、自身の知見を広げることが望ましい。また、英語のテキストを用いるので、日常から積極的に英語に触れておくことが望ましい。 基礎科目：生物Ⅰ(1年)、環境科学（5年） 関連科目：数理科学Ⅱ（5年）、生命科学Ⅱ（５）、科学探求（専2） 受講上のアドバイス： 『本科目は環境教育ならびに原子カコア人材育成関連科目である。』環境に関する情報は国連や環境省のホームページをはじめとして種々のホームページで公開されているので、随時閲覧して、自身の知見を広げることが望ましい。授業開始時に着席していない場合、遅刻とする。

Characteristics of Class / Division in Learning

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

選択

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	●ガイダンス、グループ分け ●総論	環境科学特論で学修する内容の概要について、理解することができる。
		2nd	●生態系Ⅰ(地上の生態系)	地上の生態系について理解し、説明ができる。
		3rd	●生態系Ⅱ(水中の生態系)	水中の生態系について理解し、説明ができる。
		4th	●生態系Ⅲ(物質循環と食物網)	物質循環と食物網について理解し、説明ができる。
		5th	●生物の多様性	生物の多様性について理解し、説明ができる。
		6th	●人口	人口の増減のメカニズムや社会の発展にともなう年齢別人口構成の変遷について理解し、説明ができる。
		7th	●地球構造学Ⅰ(プレート運動と大気圏内の環境)	プレート運動や大気圏内の環境について理解し、説明ができる。
		8th	●地球構造学Ⅱ(気候区分と海流)	地上の気候区分と海流について理解し、説明ができる。
	4th Quarter	9th	●地圏と水圏の利用Ⅰ(農地の開拓が環境に与える影響)	農地の開拓が環境に与える影響について理解し、説明ができる。
		10th	●地圏と水圏の利用Ⅱ(資源開発が環境に与える影響)	資源開発が環境に与える影響について理解し、説明ができる。
		11th	●エネルギー資源と消費Ⅰ(エネルギーの種類)	エネルギーの種類について理解し、説明ができる。
		12th	●エネルギー資源と消費Ⅱ(各種エネルギーとその効率)	各種エネルギーとその効率について理解し、説明ができる。
		13th	●大気汚染	大気汚染について理解し、説明ができる。
		14th	●地圏と水圏の汚染Ⅰ(人類の活動が生態系へ与える影響)	人類の活動が生態系へ与える影響について理解し、説明ができる。
		15th	●地圏と水圏の利用Ⅱ(環境汚染と健康)	環境汚染と健康について理解し、説明ができる。
		16th	●気候変動	気候変動について理解し、説明ができる。

Evaluation Method and Weight (%)

	プレゼンテーション	スライド内容	ディスカッションへの参加	演習問題	Total
Subtotal	20	20	20	40	100
基礎的能力	0	0	0	0	0
専門的能力	20	20	20	40	100
分野横断的能力	0	0	0	0	0

Tsuyama College	Year	2023	Course Title	Engineering Ethics

Course Information

Course Code	0020	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 1st
Term	First Semester	Classes per Week	2
Textbook and/or Teaching Materials	Textbook: Hayashi, Miyazawa et al. "Ethics of Engineers (Revised Edition)" Corona Publishing Co., Ltd., Reference Book: Hisatake Kato "Ethics of Technology and Humans" NHK Library, etc.		
Instructor	HOSOTANI Kazunori,MIYASHITA Takuya		

Course Objectives

Purpose of study: Understand the necessity of engineering ethics and engineer ethics, and acquire a basic sense of responsibility for future activities as an engineer.

Achievement goal:
・ Recognize the responsibilities, contributions, and originality that engineers have on society, and be able to give consideration so that the results of technology will be accepted by society.
・ Understand the historical and social background and importance of engineer ethics, and explain the role and responsibility of engineers in society.
・ Understand and explain basic matters related to engineer behavior such as accountability, whistleblowers, product liability, and risk management.
・ Through the examination of issues by the group, it is possible to promote collaborative work with a sense of ownership.

Rubric

	Ideal Level	Standard Level	Acceptable Level	Acceptable Level
Achievement 1	It is possible to understand and explain that engineers are aware of the responsibilities, contributions, and originality that society has, and to give consideration so that the results of technology will be accepted by society, and even apply it.	Be able to understand and explain that engineers recognize the responsibilities, contributions, and originality that society has, and take care to ensure that the results of technology are accepted by society.	It is possible to recognize the responsibilities, contributions, and originality that engineers have on society, and to recognize the importance of giving consideration to the acceptance of technological results by society.	It has not reached the left.
Achievement 2	Understand the historical and social background and importance of engineer ethics, understand and explain the roles and responsibilities of engineers in society, and even apply them.	Understand the historical and social background and importance of engineer ethics, and understand and explain the roles and responsibilities of engineers in society.	Understand the historical and social background and importance of engineer ethics, and recognize the importance of the role and responsibility of engineers in society.	It has not reached the left.
Achievement 3	Can understand and explain basic matters related to engineer behavior such as accountability, whistle-blowing, product liability, and risk management, and can even apply them.	Understand and explain basic matters related to engineer behavior such as accountability, whistleblowers, product liability, and risk management.	Recognize the importance of basic matters related to engineer behavior such as accountability, whistleblowers, product liability, and risk management.	It has not reached the left.
Achievement 4	Through the examination of issues by the group, it is possible to promote collaborative work with a sense of ownership, to lead the members as a coordinator of discussions, and to actively present their own opinions.	Through the examination of issues by the group, it is possible to promote collaborative work with a sense of ownership, actively participate in discussions, and speak multiple times.	Through the examination of issues by the group, it is possible to promote collaborative work with a sense of ownership and to participate in discussions.	It has not reached the left.

Assigned Department Objectives

Teaching Method

Outline	* Relationship with business: In this course, faculty members who were engaged in the management and operation of large-scale computers and networks at other institutions will make use of their experience to teach about engineer ethics issues in the information society. In addition, faculty members who were engaged in design / development at an electronics manufacturer and information programming at an environmental research company will use their experience to give lessons on engineer ethics issues that can occur in the real world. By general / specialty: Specialty, natural science basics / common Basic discipline of choice : Engineering ethics / engineer ethics Major related to learning goals: This subject is the major learning goals "((5) Along with studying engineering ethics and taking special lectures on engineer ethics, you can broadly understand engineer ethics. " Relationship with Engineer Education Program: The main learning and educational goals of this subject are "(E)". Class outline: Modern society is built on many technologies, and misuse of technologies can pose a serious crisis to society and nature. For this reason, engineers must have a responsibility to correctly understand the meaning of the technology they handle and to make it useful for society and nature. From this point of view, we deal with engineering ethics in general.
Style	Class method: Classes are conducted in various ways such as board writing, projectors, discussions, and presentations, mainly through case studies in the fields of machinery / control and electronics / information. It is necessary to think for yourself, investigate, and actively exchange opinions. Grade evaluation method: The grades of the first half (Miyashita) and the second half (Hosoya) are evaluated equally. In the first half, group reports are evaluated at 40%, and individual reports including evaluations by others are evaluated at 60%. In the second half, reports including report assignments are evaluated at 60%, and group discussions and presentations are evaluated at 40%.
Notice	Precautions for taking this course: This course is a "course that requires study outside of class hours". Classes are offered for 15 credit hours per credit, but 15 credit hours are required in addition to this. Follow the instructions of your instructor for these studies. Course advice: Courses that include essential content in the engineer education program. Those who aim to play an active role as engineers in the future must take this course. "This subject is related to environmental education and nuclear core human resource development. 』 Basic subjects: Ethics (1 year) and Engineering Ethics (5), general engineering subjects, basic knowledge related subjects such as society, economy, nature, environment, companies, etc . : Advanced technology special lecture (special 1, specialized) 2), Special Research (Special 1, Special 2), Environmental Science (Special 1), Contemporary Philosophy (Special 2), Bioengineering (Special 1), etc. Advice on Courses: General Course Faculty of Industrial Ethics (5) Following the overview, this subject taught by a professional teacher aims at more practical engineering ethics education. A broad perspective on science / technology, manufacturing, society / economy, companies, the global environment, etc. is important. This subject is an environmental education related subject. In this lecture, attendance less than 30 minutes from the start of class will be delayed, and attendance after that will be treated as absent.

Characteristics of Class / Division in Learning

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

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Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	・ Guidance	Understand the purpose of education, learning content, evaluation method, etc. Also, decide the discussion group in the first half
		2nd	・ Learning content outside class hours: Report on discussion content (weekly)	
		3rd	・ Determining discussion issues and division of roles within the group	Understand and explain the items on the left
		4th	・ Learning content outside class hours: ・ Survey and organization based on discussion content (weekly)	
		5th	・ Group discussion 1 [Clarification of discussion points]	Understand and explain the items on the left
		6th	・ Learning content outside class hours: ・ Preparation for general discussion	
		7th	・ Group discussion 2 [Summary for general discussion]	Understand and explain the items on the left
		8th	・ Learning content outside class hours: Preparation of presentation materials	
	2nd Quarter	9th	・ Overall discussion [evaluation by others]	Understand and explain the items on the left
		10th	・ Learning content outside class hours: Survey on issues to be examined	
		11th	・ Regroup discussion after general discussion	Understand and explain the items on the left
		12th	・ Learning content outside class hours: Meeting for preparation of general report	
		13th	・ Summary of group discussions, report preparation	Summarize the results of group discussions regarding the content of the first half of the discussion

		14th	・ Learning content outside class hours: Preparation of group reports and individual reports	
		15th	・ Guidance	
		16th	・ Learning content outside class hours: [Preparation for discussion]	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Self Evaluation	Task	Group discussion	Total
Subtotal	0	20	5	0	55	20	100
Basic Proficiency	0	0	0	0	0	0	0
Specialized Proficiency	0	0	0	0	0	0	0
Cross Area Proficiency	0	20	5	0	55	20	100

Tsuyama College	Year	2023	Course Title	Experiments of Electronic and Computer Systems

Course Information

Course Code	0021	Course Category	Specialized / Compulsory
Class Format	Experiment	Credits	School Credit: 4
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 1st
Term	Year-round	Classes per Week	4
Textbook and/or Teaching Materials			
Instructor	NAKAMURA Shigeyuki,ONISHI Atsushi,SORI Hitoshi		

Course Objectives

Learning objectives: To acquire teamwork skills through organized experiments in circuit design, control design, network design, etc., and at the same time, to deepen basic knowledge and problem-solving skills.

Objectives:
1.To deepen students' basic knowledge of circuits, controls, networks, and other technologies.
2. To be able to summarize the results of experiments in a report using easy-to-understand diagrams and text.
◎To be able to demonstrate teamwork skills and work systematically to solve problems.
◎Develop design skills, such as the ability to find a problem clearly and find the most appropriate solution or method.
◎To be able to carry out experiments systematically according to a schedule

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	To be able to fully understand the basic principles and phenomena of circuits, control, networks, and other technologies through experiments, to further deepen their knowledge, and to provide technical instructions and information to other students.	Understand and deepen their knowledge of basic principles and phenomena related to circuits, control, networks, and other technologies through experiments, and be able to conduct experiments autonomously.	Be able to conduct experiments on circuits, controls, and networks with specific help from other members of the group on some of the content.	Unable to conduct experiments on technologies such as circuits, control, and networks.
Achievement 2	To be able to logically summarize the validity evaluation and discussion of experimental results in a report with instructions and corrections from others.	With strong instructions and corrections from others, they can barely summarize the validity evaluation and discussion of the experimental results in a report.	It is not possible to summarize the evaluation of the validity of the experimental results and the discussion in the report.	Be able to control the actions of members to achieve goals so that appropriate communication can take place among members.
Achievement 3	By getting specific help from other members, you can accomplish your role and goals.	Can't accomplish my roles and goals.	Be able to use basic knowledge of circuits, control, networks, and other technologies to find appropriate ways to solve problems and instruct other students.	Use basic knowledge of circuits, control, networks, and other technologies to judge the appropriateness of problem solving methods proposed by other students, or to propose modifications.
Achievement 4	Can't judge whether the problem-solving methods proposed by other students, etc. are appropriate or not.	Be actively involved in the planning and execution of the experiment so that not only you but also other members can achieve the goal as planned.	Be able to act autonomously to achieve goals according to a set plan.	Under the guidance of others, be able to take action to achieve goals according to a set plan.

Assigned Department Objectives

Teaching Method

Outline	General or Specialized : Specialized Field of Study: Experimental and Practical Required/Elective: Required Underlying disciplines: Electrical and electronic engineering and related fields/control and systems engineering related, information science, information engineering and related fields/information networks related Relationship to learning and educational goals: This course corresponds to the learning goal of the major: "(3) Through practical learning in special experiments, students will deepen their understanding of knowledge related to the specialized technical field, and at the same time, acquire the ability to carry out experiments and analyze and consider data. These subjects are equivalent to the following Relationship with JABEE programs : The main goal of learning / education in this class is "(C), C-2", also "A-2", "C-1", "D-1" and "D-2" are involved. Outline of the class: In the special experiments, students will systematically engage in experiments related to the content studied in this course in order to develop teamwork skills that are essential in the field of engineering.

Style	Method of teaching: In the experiments of electrical and electronic systems, students are not divided into groups and conduct experiments on two themes in 15 weeks. For the information experiments, students will be divided into two groups and each group will conduct experiments for seven weeks. In each experiment, students are required to cooperate with each other and work on the problem systematically, keeping in mind the development of teamwork skills. Three teachers will be in charge of each experiment. Students are required to submit a report for each theme. The method of conducting each experiment is as follows. For the experiments in electrical and electronic engineering, two themes shown in the lesson plan will be conducted in 15 weeks. (In charge: Nakamura). Guidance will be given in the first week. The method of conducting the experiments is as follows. Students will devise, design, fabricate, program, and experiment with electric and electronic circuits as teaching materials, with an eye to entering various electrical, electronic, and information contests. Students will be divided into groups of several and work together to develop teamwork skills. Students design and fabricate a printed circuit board and enter it in a contest. Experiments on information systems will be conducted in two groups, with seven weeks of experiments per group, for a total of 15 weeks. (In charge: Onishi, Sori). Guidance will be given in the first week. How to conduct Onishi's experiment The first half of the week is spent investigating a small problem to be solved each week, and the second half is spent conducting experiments based on the results of the investigation. Each student will have a different background in the subject before entering the major course. Students will be assigned to different roles based on their abilities and interests, and will work together to ensure that all students have the same level of knowledge and skills at the end of each week's experiment. In order to confirm that the cooperation is successful, the students are required to construct a network in the campus using the knowledge and skills they have acquired in the last week of the experiment. Grading method: Each teacher in charge of the experiment will evaluate (100%), and the average score will be used for evaluation. The teacher in charge of the experiment will evaluate the students based on the learning objectives and achievement goals of this course, using the following evaluation method as a basis, but the details of the evaluation may differ from person to person. Evaluation method Each week, students are asked to mutually evaluate the status of their roles and the achievement of their roles. The teacher will evaluate the teamwork skills based on the results (70%). The teacher will evaluate the teamwork skills based on the results (70%), and the level of knowledge and skills achieved will be evaluated by the experiment report (30%). Method of conducting the experiment in charge of Sori Students will be divided into groups of three to four students to conduct experiments on the tasks set each week. Students will be divided into groups of 3 or 4 students per group and will be assigned roles based on their abilities and interests. Students should work together to ensure that all students have the same level of knowledge and skills at the end of each week's experiment. In the final week's experiment, students will design a motor control system controller for a four-wheeled vehicle and conduct a demonstration experiment using the knowledge and skills they have acquired so far, in order to confirm that the cooperation and teamwork skills have been established.
Notice	Note: This course requires students to study outside of class hours. 15 credit hours per credit hour are offered, but 30 credit hours of study are also required. Students are required to study 30 credit hours. Advice for students: This is a valuable opportunity to understand the basic techniques of engineering technology through experiments. This is a valuable opportunity to understand the basic techniques of engineering technology through experiments, and I hope that students will understand this and take it seriously. Basic subjects: Digital Engineering I, II (Information 2, 3), Electronic Circuits I, II (Electrical and Electronic 3, 4), Control Engineering (Electrical and Electronic 4), Information Processing (Electrical and Electronic 5), Control Engineering I, II (Information 4, 5), Information Network (Information 4), Information and Communication Engineering (Information 5), etc. Related courses: Special Research on Electronics and Information Systems (2nd year), etc. Advice for students: The above lesson plan is an example, and actual progress may vary. The above lesson plan is an example, and actual progress may vary. You will be given instructions on how to proceed in your group and precautions to take during the guidance, so be sure to attend and confirm the instructions. Late arrivals will also be instructed in the guidance. Unlike the experiments in this course, we will not give detailed instructions on the contents of the experiments, how to collect data, and how to compile reports. The details and the level which each student got through his/her past study are uneven. So each student should try to rise the member's intelligence as well as own intelligence in cooperation with the members.

Characteristics of Class / Division in Learning

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

Required subjects

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance for Electrical and Electronic Experiments	
		2nd	Experiments [Invention, design and fabrication of microcomputer circuits, programming and operation experiments]	Completion of the 1st electrical and electronic experiments based on group activities
		3rd	Experiments [Invention, design and fabrication of microcomputer circuits, programming and operation experiments]	Completion of the 2nd electrical and electronic experiments based on group activities
		4th	Experiments [Invention, design and fabrication of microcomputer circuits, programming and operation experiments]	Completion of the 3th electrical and electronic experiments based on group activities
		5th	Experiments [Invention, design and fabrication of microcomputer circuits, programming and operation experiments]	Completion of the 4th electrical and electronic experiments based on group activities

		6th	Experiments [Invention, design and fabrication of microcomputer circuits, programming and operation experiments]	Completion of the 5th electrical and electronic experiments based on group activities
		7th	Experiments [Invention, design and fabrication of microcomputer circuits, programming and operation experiments]	Completion of the 6th electrical and electronic experiments based on group activities
		8th	Revision of reports and additional experiments	Completion of all electrical and electronic
	2nd Quarter	9th	Experiment [Design and fabrication of printed circuit boards]	Completion of the 7th electrical and electronic experiments based on group activities
		10th	Experiment [Design and fabrication of printed circuit boards]	Completion of the 8th electrical and electronic experiments based on group activities
		11th	Experiment [Design and fabrication of printed circuit boards]	Completion of the 9th electrical and electronic experiments based on group activities
		12th	Experiment [Design and fabrication of printed circuit boards]	Completion of the 10th electrical and electronic experiments based on group activities
		13th	Experiment [Design and fabrication of printed circuit boards]	Completion of the 11th electrical and electronic experiments based on group activities
		14th	Experiment [Design and fabrication of printed circuit boards]	Completion of the 12th electrical and electronic experiments based on group activities
		15th	Apply a contest	Completion of all electrical and electronic
		16th		
2nd Semester	3rd Quarter	1st	Guidance for Information System Experiment	
		2nd	Experiments [Design and construction of network systems]	Completion of the 1st network experiment based on group activities
		3rd	Experiments [Design and construction of network systems]	Completion of the 2nd network experiment based on group activities
		4th	Experiments [Design and construction of network systems]	Completion of the 3rd network experiment based on group activities
		5th	Experiments [Design and construction of network systems]	Completion of the 4th network experiment based on group activities
		6th	Experiments [Design and construction of network systems]	Completion of the 5th network experiment based on group activities
		7th	Experiments [Design and construction of network systems]	Completion of the 6th network experiment based on group activities
		8th	Revision of the report and additional experiments	Completion of the network experiment and submission of the report
	4th Quarter	9th	Experiments [Embedded programming with H8 microcomputers]	Completion of the 1st network experiment based on group activities
		10th	Experiments [Embedded programming with H8 microcomputers]	Completion of the 2nd network experiment based on group activities
		11th	Experiments [Embedded programming with H8 microcomputers]	Completion of the 3rd network experiment based on group activities
		12th	Experiment [Control simulation using MATLAB]	Completion of the 4th network experiment based on group activities
		13th	Experiment [Four-wheel motor control experiment]	Completion of the 5th network experiment based on group activities
		14th	Experiment [Four-wheel motor control experiment]	Completion of the 6th network experiment based on group activities
		15th	Revision of reports, additional experiments	Completion of all experiments and submission of reports, grade confirmation
		16th		

Evaluation Method and Weight (%)

	Examination	Presentation	mutual evaluation	Behavior	Report	Other	Total
Subtotal	0	0	70	0	30	0	100
Basic Proficiency	0	0	0	0	0	0	0
Specialized Proficiency	0	0	0	0	30	0	30
Cross Area Proficiency	0	0	70	0	0	0	70

Tsuyama College	Year	2023	Course Title	Practical English Ⅱ

Course Information

Course Code	0029	Course Category	General / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 2nd
Term	First Semester	Classes per Week	2
Textbook and/or Teaching Materials	Steps to Academic English(Asahi); Successful Keys to the TOEIC Listening and ReadingTest GOAL 500 1 (Kirihara) Other prints. Be sure to bring a dictionary and a laptop.		
Instructor	YAMAGUCHI Yumi		

Course Objectives

Learning purposes: To develop the four skills (listening, reading, writing and speaking) in a balanced manner.

Course Objective: To develop a balance of the four skills (listening, reading, writing and speaking).
1. To try to communicate in English, and be able to understand and communicate specific information and ideas.
2. To read English sentences aloud with correct punctuation and intonation.
3. To summarize the gist of the text in English.
4. To convey one's ideas orally in paired work and presentations.
◎5. To listen to the opinions of others in Japanese and English, and be able to use effective explanatory methods and means to convey one's own opinions and facilitate communication.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	To be thoroughly able to understand and communicate specific information and ideas with an attitude of willingness to communicate in English.	To be almost able to understand and communicate specific information and ideas with an attitude of willingness to communicate in English.	To be at least able to understand and communicate specific information and ideas with an attitude of willingness to communicate in English.	Not to be able to understand and communicate specific information and ideas with an attitude of willingness to communicate in English.
Achievement 2	To be thoroughly able to read aloud English texts with correct punctuation and intonation	To be almost able to read aloud English texts with correct punctuation and intonation	To be at least able to read aloud English texts with correct punctuation and intonation	Not too be able to read aloud English texts with correct punctuation and intonation
Achievement 3	To be thoroughly able to summarize the gist of the text in English.	To be almost able to summarize the gist of the text in English.	To be at least able to summarize the gist of the text in English.	Not to be able to summarize the gist of the text in English.
Achievement 4	To be thoroughly able to communicate in pair work and presentations.	To be almost able to communicate in pair work and presentations.	To be at least able to communicate in pair work and presentations.	Not to be able to communicate in pair work and presentations.
Achievement 5	To be thoroughly able to listen to the opinions of others in Japanese and English, and to use effective explanatory methods and techniques to convey one's own opinions and facilitate communication	To be almost able to listen to the opinions of others in Japanese and English, and to use effective explanatory methods and techniques to convey one's own opinions and facilitate communication	To be at least able to listen to the opinions of others in Japanese and Englishge, and to use effective explanatory methods and techniques to convey one's own opinions and facilitate communication	Not to able to listen to the opinions of others in Japanese and English, and not to use effective explanatory methods and techniques to convey one's own opinions and facilitate communication

Assigned Department Objectives

Teaching Method

Outline	General / Specialty: General Areas of study: Foreign languages Basic disciplines: English, English and American literature, linguistics, phonetics Relationship with Advanced Course learning goals:This course aims to learn from the advanced course "(1) . Relationship with engineer education program: The main goals of learning / education in this class is "(B)". Class outline: Students will be able to make presentations in English while learning expressions and techniques that are frequently used in presentations, and also prepare for the TOEIC test.
Style	Class method: To be able to express what you want to say in English by using the expressions studied in the class. At the same time, we will use the TOEIC textbook to prepare for taking the TOEIC test. Grade evaluation method: Weekly oral presentations 25%, assignment submission 25%, two quizzes 50%.
Notice	Precautions for taking this course: This course is a "course that requires study outside of class hours". A total of 45 hours of study is required per credit, including the class hours and study outside of class hours. For study outside of class hours, follow the instructions from the instructor. Course advice: Actively participate in classes and submit assignments within the deadline. Given the current situation in which TOEIC is widely accepted as a means of judging English proficiency, have a positive attitude towards taking the TOEIC test. Basic subjects: English IV (4th), English V (5) Related subjects: Technical English reading (Specialty 1) Attendance advice: Admission after the start of class is considered to be late, and one credit hour will be counted as absent for two late arrivals.

Characteristics of Class / Division in Learning

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

Elective subjects

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance (Explanations on study methods such as preparation, review, etc., and precautions on taking the course)	Gain an understanding of the goals and content of this course.
		2nd	SAE Unit 11 / TOEIC Preparation	Understand photovoltaics in English. Understand grammar.
		3rd	SAE Unit 11 / TOEIC Preparation	Understand photovoltaics in English. Able to understand English sentences that include the progressive tense.
		4th	SAE Unit 12 / TOEIC Preparation	Understand the problem of hay fever in English. Able to respond to 5W1H questions.
		5th	SAE Unit 12 / TOEIC Preparation	Understand the problem of hay fever in English. Able to understand short dialogues in English.
		6th	SAE Unit 13 / TOEIC Preparation	Understand the issues facing the tourism industry in English. Able to understand a short speech in English.
		7th	SAE Unit 13 / TOEIC Preparation	Understand the issues facing the tourism industry in English. Able to understand short dialogues in English.
		8th	mini test①	Be able to summarize up to 7th weeks.
	2nd Quarter	9th	SAE Unit 14 / TOEIC Preparation	Understand the issue of Japan's declining birthrate and aging population in English. Understand grammar.
		10th	SAE Unit 14 / TOEIC Preparation	Understand the issue of Japan's declining birthrate and aging population in English. Able to understand English sentences that include the progressive tense.
		11th	SAE Presentation (practice) / TOEIC Preparation	Able to respond to 5W1H questions.
		12th	SAE Presentation (practice) / TOEIC Preparation	Able to understand short dialogues in English.
		13th	SAE Presentation (performance) / TOEIC Preparation	Able to understand a short speech in English.
		14th	SAE Presentation (performance) / TOEIC Preparation	Able to understand short dialogues in English.
		15th	mini test②	Be able to summarize up to 14th weeks.
		16th	Return and commentary of exam answers	Be able to have feedback on the endterm examamination.

Evaluation Method and Weight (%)

	Mini-test	Presentation	Assignments	Total
Subtotal	50	25	25	100
Basic Proficiency	50	20	25	95
Specialized Proficiency	0	0	0	0
Cross Area Proficiency	0	5	0	5

Tsuyama College	Year	2023	Course Title	Social Sciences

Course Information

Course Code	0030	Course Category	General / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 2nd
Term	Second Semester	Classes per Week	2
Textbook and/or Teaching Materials	木村護郎クリストフ『節英のすすめ』萬書房。また、各自の選択テーマによって，購入すべき文献を別途指示することがある。		
Instructor	KADOYA Hidenori		

Course Objectives

学習目的：専門とは異なる分野における思考方法をまなぶことによって，人間性涵養の背景となるような教養を身につけることを学習目的とする。
到達目標：社会科学的な視点から人間，社会，文化について多面的に理解し，国際社会の一員として社会的諸問題の解決に向けて主体的に貢献する自覚と素養を培う。人間活動や科学技術の役割と影響に関心を持ち，幸福とは何かを追究しながら技術者として社会に貢献する自覚と素養を培う。

Rubric

	優	良	可	不可
評価項目1	十分に授業に参加すること	2/3以上の授業に参加すること	2/3以上の授業に参加すること	10回をこえて欠席すること
評価項目2	指示に十分に従ったレポートを提出する／または口頭報告をおこなうこと	指示にある程度従ったレポートを提出する／または口頭報告をおこなうこと	指示に最低限従ったレポートを提出する／または口頭報告をおこなうこと	指示に従ったレポートを提出しない／または口頭報告をおこなわないこと

Assigned Department Objectives

Teaching Method

Outline	一般・専門の別：一般　人文・社会 学習の分野：史学・ジェンダー学・社会学・言語学・障害学 専攻科学習目標との関連：本科目は専攻科学習目標「(1) 数学，物理を中心とした自然科学系の科目に関する知識を深め，人文・社会科学に関する知見を広めて，機械・制御システム工学および電子・情報システム工学に関する基礎学力として応用できる。」に相当する科目である。 技術者教育プログラムとの関連：本科目が主体とする学習・教育到達目標は「(F) 地球的視点から多面的に物事を考えることができ，地域との連携による総合能力の展開ができる」である。 授業の概要：この科目は，近代以降に生み出された社会科学の古典やよく知られた諸学説に関する基本的な知識を参照・学習しながら，現代社会の具体的な諸問題について考えることによって，社会科学的なものの見方，思考方法を身につけることを目的とする。
Style	授業の方法：毎週の当番報告者を中心として講義をおこないながら，受講者の意見を求め，そこからさらに議論を発展させていく方法で進める。 成績評価方法： 提出課題（100%）もしくは口頭報告（100%）。十分な参加が評価対象となる必要条件である。課題は課題提示の翌週の提出することとし，授業時間外の学習評価はその内容によってなされる。再試験は実施しない。
Notice	履修上の注意：本科目は「授業時間外の学修を必要とする科目」である。当該授業時間と授業時間外の学修を合わせて，１単位あたり４５時間の学修が必要である。授業時間外の学修については，担当教員の指示に従うこと。 履修のアドバイス：この科目の受講者には，履修のために相当の学習意欲・知的好奇心・積極性が要求される。また，講義中の積極的な発言が歓迎される。遅刻（授業開始におくれること、）に対するペナルティはもうけないが，受講者の自律性につよく期待する。事前に行う準備学習はとくにもとめない。事前に行う準備学習はとくに必要ない。 基礎科目：世界史（１年），政治経済（２），日本史（３），「人間と文化」（４），「人間と社会」（５） 関連科目：なし 受講上のアドバイス：この科目の受講者には，履修のために相当の学習意欲・知的好奇心・積極性が要求される。また，講義中の積極的な発言が歓迎される。遅刻（授業開始におくれること、）に対するペナルティはもうけないが，受講者の自律性につよく期待する。

Characteristics of Class / Division in Learning

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

選択

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	ガイダンス、導入 「社会科学」とはなにか。	
		2nd	社会科学的な思考について	レポート／プレゼンテーション準備を十分に行ったうえで参加すること。（評価項目1,2）
		3rd	社会言語学とはなにか	レポート／プレゼンテーション準備を十分に行ったうえで参加すること。（評価項目1,2）
		4th	課題としての「節英」（以下テキストにそった報告と解説をおこなう）	レポート／プレゼンテーション準備を十分に行ったうえで参加すること。（評価項目1,2）
		5th	「９・１１」と英語	レポート／プレゼンテーション準備を十分に行ったうえで参加すること。（評価項目1,2）
		6th	「自国化」による情報伝達の屈折	レポート／プレゼンテーション準備を十分に行ったうえで参加すること。（評価項目1,2）
		7th	共通語の限界	レポート／プレゼンテーション準備を十分に行ったうえで参加すること。（評価項目1,2）
		8th	言語運用能力の格差	レポート／プレゼンテーション準備を十分に行ったうえで参加すること。（評価項目1,2）
	4th Quarter	9th	コミュニケーションにおける社会言語学的課題の解決方法	レポート／プレゼンテーション準備を十分に行ったうえで参加すること。（評価項目1,2）
		10th	「国際英語」論	レポート／プレゼンテーション準備を十分に行ったうえで参加すること。（評価項目1,2）

		11th	多言語とどうつきあうか	レポート／プレゼンテーション準備を十分に行ったうえで参加すること。（評価項目1,2）
		12th	日本語に視点をおいた異言語話者間コミュニケーション①	レポート／プレゼンテーション準備を十分に行ったうえで参加すること。（評価項目1,2）
		13th	日本語に視点をおいた異言語話者間コミュニケーション②	レポート／プレゼンテーション準備を十分に行ったうえで参加すること。（評価項目1,2）
		14th	計画言語論	レポート／プレゼンテーション準備を十分に行ったうえで参加すること。（評価項目1,2）
		15th	後期末試験	レポート／プレゼンテーション準備を十分に行ったうえで参加すること。（評価項目1,2）
		16th	全体のふりかえり	

Evaluation Method and Weight (%)

	試験	発表	相互評価	自己評価	課題	小テスト	Total
Subtotal	0	100	0	0	0	0	100
基礎的能力	0	100	0	0	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

Tsuyama College	Year	2023	Course Title	Modern Philosophy

Course Information

Course Code	0031	Course Category	General / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 2nd
Term	Second Semester	Classes per Week	2
Textbook and/or Teaching Materials	None		
Instructor	KAMIYA Ken		

Course Objectives

Learning Purpose: The aim of this class is to enable students to recognize their responsibility as engineers etc. towards society through the systematic study of the problems of contemporary philosophy that are deeply intertwined with ethical issues.
Course Objectives:
1. To become capable of understanding what kind of thing human beings have been thought to be through the study of the ideas of philosophers.
2. To become capable of understanding the way of thinking that belongs to contemporary science and the nature of scientific technology, as well as the impact of this technology on society and nature.
3. To become capable of thinking about human nature, culture and morality from a social and global perspective.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	The student understands what kind of thing human beings have been thought to be through the study of the ideas of philosophers and can explain this expansively in detail.	The student understands what kind of thing human beings have been thought to be through the study of the ideas of philosophers and can explain this in detail.	The student understands what kind of thing human beings have been thought to be through the study of the ideas of philosophers and can explain this expansively in a basic manner.	The student has not reached these levels.
Achievement 2	The student understands the way of thinking that belongs to contemporary science and the nature of scientific technology, as well as the impact of this technology on society and nature, and can explain this expansively in detail.	The student understands the way of thinking that belongs to contemporary science and the nature of scientific technology, as well as the impact of this technology on society and nature, and can explain this in detail.	The student understands the way of thinking that belongs to contemporary science and the nature of scientific technology, as well as the impact of this technology on society and nature, and can explain this in a basic manner.	The student has not reached these levels.
Achievement 3	The student is capable of thinking expansively and in detail about human nature, culture and morality from a social and global perspective.	The student is capable of thinking in detail about human nature, culture and morality from a social and global perspective.	The student is capable of thinking in a basic manner about human nature, culture and morality from a social and global perspective.	The student has not reached these levels.

Assigned Department Objectives

Teaching Method

Outline	General or Specialized : General Field of Learning : Humanities Foundational Academic Disciplines : Philosophy/Ethics Relationship with Educational Objectives : This class corresponds to the goal of "capable of a broad understanding of engineering ethics" of the advanced engineering course. Relationship with JABEE programs : The main goal of learning and education in this subject is "(E) Understanding Engineering Ethics". Course Outline : Education in philosophy and ethics is a necessary culture for contemporary engineers and researchers in the field of engineering. We will inquire into the character of our technological society through the treatment of fundamental philosophical and ethical problems.
Style	Course Method : Classes will be held in the second semester. Teaching will be conducted mainly through discussion with students. Students will be expected to study outside of the classroom to prepare their coursework. Grade Evaluation Method: One assignment (100%). The assignment will assign tasks to judge the achievement of the above goals. In principle, there will be no retaking exams. As for the achievement of study outside of class hours, understanding of the content will be evaluated together with the achievements of study during class hours in the same way through assignments.
Notice	Precautions on Enrollment : This is a class that requires study outside of class hours. A total of 45 hours of study is required per credit, including both class time and study outside class time. Follow the instructions of the instructor regarding study outside of class hours. Course Advice: Since it will be obligatory to submit an assignment, read newspapers etc. on a daily basis and form your own interests. Organize what you have learned and whatever questions you may have after each class to prepare for the next class. Foundational Subjects : Ethics (All programs, 1st year), Engineering Ethics (All programs, 5th year) Related Subjects : Engineering Ethics (Advanced course, 1st year) Attendance Advice : Attendance will be checked at the beginning of each class. Persons not present at the time will be deemed late regardless of the length of the delay. Students arriving later than 30 minutes after the beginning of the class hour will be deemed absent. However, accumulation of delayed arrivals will not be interpreted as absences. Those who arrive late must signal their arrival at the time of arrival. If this is not done, the student will be considered absent.

Characteristics of Class / Division in Learning

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

Elective Subject

Course Plan				
			Theme	Goals
2nd Semester	3rd Quarter	1st	Introduction	General explanation of the goals
		2nd	The Foundations of Contemporary Philosophy (Study outside class hours: Study of materials based on instructions given in class. The same applies for each of the following weeks.)	Goals 1 & 3
		3rd	The Foundations of Contemporary Philosophy	Goals 1 & 3
		4th	The Foundations of Contemporary Philosophy	Goals 1 & 3
		5th	The Development of Contemporary Philosophy	Goals 1 & 3
		6th	The Development of Contemporary Philosophy	Goals 1 & 3
		7th	The Development of Contemporary Philosophy	Goals 1 & 3
		8th	The Development of Contemporary Philosophy	Goals 1 & 3
	4th Quarter	9th	Contemporary Philosophy and Technology	Goal 2
		10th	Contemporary Philosophy and Technology	Goal 2
		11th	Contemporary Philosophy and Technology	Goal 2
		12th	Contemporary Philosophy and Society	Goals 2 & 3
		13th	Contemporary Philosophy and Society	Goals 2 & 3
		14th	Contemporary Philosophy and Society	Goals 2 & 3
		15th	Contemporary Philosophy and Society	Goals 2 & 3
		16th	Explanation of Evaluation	Goal 3

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual evaluations between students	Self Assessment	Assignment	Mini Exam	Total
Subtotal	0	0	0	0	100	0	100
Basic Proficiency	0	0	0	0	80	0	80
Specialized Proficiency	0	0	0	0	0	0	0
Cross Area Proficiency	0	0	0	0	20	0	20

Tsuyama College	Year	2023	Course Title	Special Lecture on Advanced Engineering

Course Information

Course Code	0022	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 1
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 2nd
Term	Intensive	Classes per Week	
Textbook and/or Teaching Materials	Distribute reference materials as needed.		
Instructor	KONISHI Daijiro,SAEKI Fumihiro,TERAMOTO Takayuki		

Course Objectives

Learning purposes :
By learning about the ever-increasing technological trends and recognizing the importance of technology in society, this subject will provide hints for new developments in research and learning.

Course Objectives :
1. Be able to know the trends of advanced technology, understand the contents of technology and engineering required in the world, and explain the outline appropriately.
2. Considering the relationship with society and the impact of technology on society, you can express your own thoughts and opinions regarding the direction of advanced technology.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	You can thoroughly investigate the content of the lecture and write a exemplary report according to the task, including the content.	You can investigate the content of the lecture and write a exemplary report according to the task, including the content.	For tasks, you can write a report according to the task.	You have not reached the level shown on the left.
Achievement 2	Considering the relationship with society and the impact of technology on society, you can write a exemplary report that fully includes your own thoughts and opinions.	Considering the relationship with society and the impact of technology on society, you can write a exemplary report that includes your own thoughts and opinions.	You can write a report that includes your own thoughts and opinions.	You have not reached the level shown on the left.

Assigned Department Objectives

Teaching Method

Outline	* Relationship with practice: This subject participates in lectures and workshops designated by the advanced course and tackles the designated tasks. The lecture will be held by inviting lecturers who are involved in front-end technology at companies etc. Students will learn about the technological trends and the progress of the research in various fields, broaden your horizons, and learn about the impact of technology on society. General or Specialized : Specialized Field of learning : Common and basics of natural science Foundational academic disciplines : Engineering / social Science Relationship with Educational Objectives : This subject corresponds to the major learning goal "(1) Students deepen their knowledge of natural science subjects centering on mathematics and physics, broaden their knowledge of the humanities and social sciences, and apply them as basic academic skills in mechanical and control system engineering and electronic and information system engineering." and "(4) By voluntarily and actively exploring and promoting special research, students will acquire the ability to identify problems and solve problems that are essential for an engineer, that is, the ability to design and research to produce creative results, and to acquire research results. You can make presentations and communicate with other researchers and engineers by making presentations at academic conferences. Furthermore, by attending special lectures on engineering ethics and studying engineering ethics, students will be able to broadly understand engineering ethics. Through participation in off-campus practical training and academic societies, as well as learning in advanced technology special lectures, students can work together with local communities and understand the importance of seeing things from a global perspective". Relationship with JABEE programs : The main goal of learning / education in this class is "(A) A-1". Accompanyingly, it is also involved in "(E)E-1". Course outline : This is a special lecture to learn about the contents directly related to the student's specialty, the technological trends and the progress of the research in each of the surrounding fields. Deepen your knowledge and broaden your horizons, and learn a wide range of relationships with society and the impact of technology on society.
Style	Course method : Students will independently select assignments from lectures, workshops, remote learning classes, etc. designated by the advanced course, participate in them, and complete the designated tasks. Information will be posted on the advanced course website and e-mail, so do not overlook it. Grade evaluation method : The instructor in charge will specify each task individually, but it is mainly based on the evaluation of the report on the task after the lecture. Participate in 7 or more lectures held as this subject, submit 4 or more small assignments, and get a passing score. If you get a passing score in 4 or more small tasks, the final credits will be approved by the Advanced Course Steering Committee at the end of the school year based on the 4 average scores from the one with the best grade. No retaking exam will be given.

Notice	Precautions on the enrollment : This subject is a "subject that requires study outside of class hours". A total of 45 hours of study is required per credit, including the class hours and study outside of class hours. For study outside of class hours, follow the instructions of the instructor. This subject is a special lecture, and you should be aware that the essence is only spoken in a short time in the lecture, take time for learning other than the lecture, and take sufficient time to tackle the tasks. Course advice : Download and print the advanced technology special lecture attendance confirmation form from the advanced course homepage in advance. Since it will be implemented on a wide range of themes, it is important to make efforts to expand knowledge without sticking to a narrow specialty. Therefore, as preparatory learning to be performed in advance, it is useful to learn the current situation and trends of front-end technology in Japan and overseas by reading the Nikkan Kogyo Shimbun and Nihon Keizai Shimbun. Foundational subjects : All the subjects you have learned. Related subjects : All the subjects you will learn. Attendance advice : This subject is related to nuclear human resources development. Since the class will be mainly conducted by an outside lecturer, be careful not to be rude as a student of our school.

Characteristics of Class / Division in Learning

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

Elective subjects

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance (conducted at the orientation at the beginning of the school year)	You can make an attendance plan for special lectures on this subject throughout the two years.
		2nd	Participation in lectures, workshops, remote learning classes, etc. designated by the instructor	You can investigate the content of the lecture and write a exemplary report according to the task, including the content. Considering the relationship with society and the impact of technology on society, you can write a exemplary report that includes your own thoughts and opinions.
		3rd	Participation in lectures, workshops, remote learning classes, etc. designated by the instructor	You can investigate the content of the lecture and write a exemplary report according to the task, including the content. Considering the relationship with society and the impact of technology on society, you can write a exemplary report that includes your own thoughts and opinions.
		4th	Participation in lectures, workshops, remote learning classes, etc. designated by the instructor	You can investigate the content of the lecture and write a exemplary report according to the task, including the content. Considering the relationship with society and the impact of technology on society, you can write a exemplary report that includes your own thoughts and opinions.
		5th	Participation in lectures, workshops, remote learning classes, etc. designated by the instructor	You can investigate the content of the lecture and write a exemplary report according to the task, including the content. Considering the relationship with society and the impact of technology on society, you can write a exemplary report that includes your own thoughts and opinions.
		6th	Participation in lectures, workshops, remote learning classes, etc. designated by the instructor	You can investigate the content of the lecture and write a exemplary report according to the task, including the content. Considering the relationship with society and the impact of technology on society, you can write a exemplary report that includes your own thoughts and opinions.
		7th	Participation in lectures, workshops, remote learning classes, etc. designated by the instructor	You can investigate the content of the lecture and write a exemplary report according to the task, including the content. Considering the relationship with society and the impact of technology on society, you can write a exemplary report that includes your own thoughts and opinions.
		8th	Participation in lectures, workshops, remote learning classes, etc. designated by the instructor	You can investigate the content of the lecture and write a exemplary report according to the task, including the content. Considering the relationship with society and the impact of technology on society, you can write a exemplary report that includes your own thoughts and opinions.
	2nd Quarter	9th	It is necessary to participate in the above lectures at least 7 times	
		10th		
		11th		
		12th		
		13th		

		14th		
		15th		
		16th		
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 (%)

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

Tsuyama College	Year	2023	Course Title	Production Control Engineering

Course Information

Course Code	0023	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 2nd
Term	Second Semester	Classes per Week	2
Textbook and/or Teaching Materials	Textbook: 坂本賢也「生産管理入門」（理工学社）,「産業財産権標準テキスト：特許編」（発明協会）		
Instructor	KOBAYASHI Toshiro		

Course Objectives

Learning purposes:
Learn how to manage the product management system with understanding each control item and its applicable problems, and how to write the patent specification with understanding the importance of the patent.

Course objectives:
1. To be able to explain the role of the product management system in the company.
2. To be able to explain the fundamental methodologies of quality control.
3. To gain the manner of writing about the patent specification with the planning of the concrete patent application.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Outline for the product management system	The student can explain the purpose and some methodologies for the product management system in detail.	The student can explain the purpose and some fundamental methodologies for the product management system.	The student can explain some fundamental methodologies for the product management system.	The student cannot explain any fundamental methodologies for the product management system.
Quality control techniques	The student can explain the purpose and some methodologies for the quality control in details.	The student can explain the purpose and some fundamental methodologies for the quality control.	The student can explain some fundamental methodologies for the quality control.	The student cannot explain any fundamental methodologies for the quality control.
Patent specification writing	The student can write the patent specification with understanding intellectual property rights and application process.	The student can write the patent specification with understanding fundamental thinking about intellectual property rights.	The student can explain the patent specification and fundamental thinking about intellectual property rights.	The student cannot explain the patent specification and fundamental thinking about intellectual property rights.

Assigned Department Objectives

Teaching Method

Outline	* Relationship with business: The teacher, who has the expertise in product management and intellectual property rights with experience in research and development work at a heavy industry manufacturer, conducts this class about the product management system and patent in a didactic manner mainly. General or Specialized: Specialized Field of learning: Basics of natural science Foundational academic disciplines: Machine, Control, Electrical, Electronic, and Information engineering Relationship with Educational Objectives: This class is equivalent to "(2) The student has acquired knowledge of the following specialized technical fields for designing, manufacturing, and operation of machinery and systems." Relationship with JABEE programs: the main goal of learning /education in this class is "(A)" and "(D)." Course outline: Learn about product management that enhances the company's productivity by controlling production activities and patent specification writing.
Style	Course method: * Use a blackboard mainly. However, interactively learn through thinking the solution of concrete problems about each control item of the product management system. * Give some reports for students' comprehension. * Organize the student's presentations about the patent plan made by each of them to learn design skills. Grade evaluation method: Presentation (40%) + mini-exam(30%) + reports(30%) * Evaluate submission date of each report strictly. * No regular exams. For those who scored less than 60 points at the final stage of the second semester, if their attendance and class attitude are good, they will be given advance directives and will be re-examined. The results of the re-examination shall be read as the results of the regular examination, with the maximum final score of 60 points.
Notice	Precautions on the enrollment: This class is "Required outside of teaching hours course study." Therefore, this course consists of a total of forty-five hours of teaching and homework per one unit. The student should deal with the homework based on the instructions of the teacher. Attendance advice: Make sure to study voluntarily by using books about quality and reliability other than the textbook and read "AAA" thoroughly. Foundational subjects: Applied Mathematics Ⅰ (4th) Related subjects: All around subjects of advanced engineering course

Characteristics of Class / Division in Learning

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

Elective subjects

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Guidance / About intellectual property rights	Understand terms about intellectual property rights
		2nd	Patent systems	Understand some patent systems
		3rd	Discussion about patent seeds	
		4th	Scope of claim for patent	Understand the scope of claim in the patent specification
		5th	Patent survey and map	Understand the patent map
		6th	Patent specification writing	Understand the patent specification
		7th	Presentation for the patents	Make presentation about the essentials of the patent
		8th	About product management	Understand terms about product management
	4th Quarter	9th	About company and organization	Understand terms about company and organization
		10th	About the product management system	Understand terms of the product management system
		11th	About process management	Understand terms about process management
		12th	About quality control	Understand terms about quality control
		13th	Statistical approaches in quality control	Understand statistical approaches in quality control
		14th	About cost control	Understand statistical processing techniques in cost control
		15th	About environment control	Understand management techniques in environment control
		16th		

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Assignment	MIni-examination	Total
Subtotal	0	40	0	30	30	100
Basic Proficiency	0	20	0	15	15	50
Specialized Proficiency	0	20	0	15	15	50
Cross Area Proficiency	0	0	0	0	0	0

Tsuyama College	Year	2023	Course Title	Practice on Regional Cooperation

Course Information

Course Code	0024	Course Category	Specialized / Elective
Class Format	Seminar	Credits	Academic Credit: 1
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 2nd
Term	Intensive	Classes per Week	
Textbook and/or Teaching Materials			
Instructor	SAEKI Fumihiro,TERAMOTO Takayuki		

Course Objectives

Learning Objective:
Students will learn the role of our school as a community-based educational institution and acquire problem-solving skills for the community.
In this course, students will reconfirm their own skills and knowledge, and develop new approaches to research and study through contributing to the solution of problems from regional companies and through demonstrating the fun of science, technology, and experiments to elementary and junior high school students.

◎Implement and evaluate the design solutions developed to solve the client's requirements through collaborative work involving the local community.
◎Explain and communicate professional knowledge and skills to the general public in an easy-to-understand manner

Rubric

	Excellent	Good	Acceptable	Unacceptable Level
Achievement 1	Practice and evaluate designs to solve clients' requirements, and to be able to point out additional problems and make suggestions.	Practice and evaluate designs to solve the client's requirements through collaborative activities with the local community.	Practice what they have designed to solve the client's requirements through collaborative activities in cooperation with the local community.	Cannot practice what they have designed to solve the client's requirements.
Achievement 2	Propose and prepare teaching materials and explain professional knowledge and skills to the general public in an easy-to-understand manner.	Explain specialized knowledge and skills to the general public using the given teaching materials in an easy-to-understand manner.	Explain technical knowledge and skills to the general public using the given materials.	Cannot explain technical knowledge and skills to the general public using the given materials.

Assigned Department Objectives

Teaching Method

Outline	General or Specialized: Specialized Field of learning: Basic subjects in natural sciences Foundational academic disciplines: Engineering and Social Science Relationship with Educational Objectives: This class is equivalent to "(1) Deepen knowledge of natural science subjects, particularly mathematics and physics, broaden knowledge of the humanities and social sciences, and apply these as basic academic skills related to mechanical and control systems engineering and electronic and information systems engineering". Relationship with the JABEE Program The main goals of learning / education in this class are "F", also "A" and "C"are involved. Outline of the class: Contribute to the local community through open lectures, etc., by utilizing the knowledge and skills learned so far. In this course, students will be able to deepen their knowledge, broaden their perspectives, and learn about the relationship with society and the impact of technology on society.
Style	Course method: Case 1: Students are expected to actively participate in the school's open lectures, visiting classes, open campus, community events, etc., and work with the teachers in charge. And submit the designated report after implementation. Case 2: The class will be conducted based on the needs of local regions. Grade evaluation method: For students who have submitted an application for credit, evaluation will be made based on the report of the event. The evaluation will be approved by the steering committee of the advanced engineering course at the end of the academic year. In the case that the course is offered as a class based on the needs of the local community, credit will be awarded based on 70% for the examination and 30% for the assignment.

Notice	Precautions on the enrollment : This is a class that requires study outside of class hours. A total of 45 hours of study is required per credit, including both class time and study outside class time. Follow the instructions of the instructor regarding study outside of class hours. This is a course that can be taken over two years. Course Advice: Print out in advance the Report on the Community Collaboration Exercise, which is located in the shared folder. In the case of classroom lectures, teaching materials will be distributed in electronic format so that they can be viewed during class. It is important for students to have an interest in contributing to the local community by utilizing their own specialties, and to make efforts to expand their knowledge. Foundational subjects: All subjects studied so far Related subjects: All subjects Attendance advice: Since the project is mainly related to the local community, be aware that you are a student of our school when you conduct the project. Students are expected to actively cooperate in activities outside their own field of expertise. Ask your teachers for information on events related to this subject.

Characteristics of Class / Division in Learning

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

Elective subjects

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Support for events 30 hours or more	
		2nd	Teaching and support at open lectures, open campus, community events, etc. in which the school is involved	
		3rd	Cooperate in multiple events for a total of at least 30 hours and submit a report . (Travel time is not included).	
		4th	Total More than 30 hours	
		5th		
		6th	Study outside class time: Event preparation and cleanup (If a preparation day is set aside, it may be included in class time.) Preparation of a report (The format will be separately indicated.)	
		7th		
		8th		
	2nd Quarter	9th		
		10th		
		11th		
		12th		
		13th		
		14th		
		15th		
		16th		
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 (%)

	Report	Total
Subtotal	100	100

Basic Proficiency	0	0
Specialized Proficiency	0	0
Cross Area Proficiency	100	100

Tsuyama College	Year	2023	Course Title	Thesis Work Ⅱ

Course Information

Course Code	0025	Course Category	Specialized / Compulsory
Class Format	Experiment	Credits	School Credit: 8
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 2nd
Term	Year-round	Classes per Week	8
Textbook and/or Teaching Materials			
Instructor	TERAMOTO Takayuki,NAKAMURA Shigeyuki,KATORI Shigetaka,NISHIO Kimihiro,OKE Shinichiro,SHIMADA Takao,YAMAMOTO Tsunayuki,SORI Hitoshi,MORI Yoshiya		

Course Objectives

Learning purposes : To acquire the ability to identify engineering and technical problems and to solve them concretely, and to acquire the basic skills of an engineer.

Course Objectives :
1. To be able to deepen basic knowledge of technology and acquire and apply information technology.
2. To be able to carry out experiments independently and continuously, and to analyze and consider data.
3. To acquire and demonstrate problem-solving skills, research skills, communication skills, and presentation skills.
◎4. Understand the ethics of engineers, be able to think multilaterally from a global perspective, and develop comprehensive abilities in cooperation with the local community.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	To be able to understand technology and research trends related to special research by acquiring basic knowledge of technology and information technology based on literature and material research, and to be able to understand and explain the purpose of research in relation to these.	To be able to understand the purpose of special research by acquiring basic knowledge about technology and information technology based on literature and material research.	The student will be able to state the purpose of the special research using basic knowledge of technology and information technology based on a survey of literature and materials.	Students do not have basic knowledge of technology and information technology based on literature and material research, and are unable to understand the purpose of special research.
Achievement 2	To be able to formulate a research plan to solve engineering problems, to carry out experiments independently and continuously, and to analyze and discuss data.	To be able to plan a research project to solve an engineering problem, and to understand the results obtained by carrying out an experiment independently and continuously.	Develop a research plan to solve engineering problems and carry out experiments independently and continuously.	Inability to formulate a research plan and to carry out experiments independently and continuously.
Achievement 3	Acquire and demonstrate problem-solving, research, communication, and presentation skills. To be able to use effective presentations to explain things to others in an easy-to-understand manner.	Problem-solving, research, communication, and presentation skills.	Explain the importance of problem-solving, research, communication, and presentation skills.	No problem-solving, research, communication, or presentation skills.
Achievement 4	Understand the effects and influences of technology on society and nature, understand the responsibilities that engineers have to society, and be able to develop comprehensive abilities, such as thinking about things from multiple perspectives.	Understand the impact and effects of technology on society and nature, understand the responsibility that engineers have to society, and be able to think about things from multiple perspectives.	Understand the effects and impact of technology on society and nature, and express the responsibility that engineers have to society.	Cannot explain the responsibilities that engineers have to society.

Assigned Department Objectives

Teaching Method

Outline	General or Specialized : Specialized Field of learning : Experiment and practice Foundational academic disciplines : Engineering/Electrical and Electronic Engineering, Information Engineering Relationship with Educational Objectives :This class is equivalent to "(4) Develop multi-disciplinary ability". Relationship with JABEE programs :The main goals of learning / education in this class is (D). In this class, students are expected to acquire the following design skills: conceptual ability, problem-setting ability, ability to recognize problems from the viewpoint of public health and safety, culture, economy, environment, ethics, etc., ability to find solutions under the constraints arising from these problems, ability to express the conceptualized ideas in diagrams, sentences, formulas, programs, etc., and ability to plan and implement continuously. In this course, students will be involved in developing the ability to find solutions under constraints arising from these problems, the ability to express their concepts in diagrams, sentences, formulas, programs, etc., and the ability to plan and implement continuously. In addition, students are required to attend a lecture on engineering ethics. Course outline :This class is designed to cultivate the ability to discover problems and solve problems independently by working on distinctive research topics, and to deepen knowledge and acquire research and development skills. The results of the research will be submitted as a summary of the interim presentation, and if necessary, external presentations will be made at academic conferences.
Style	Course method : Students are expected to carry out research activities independently under the guidance of their supervisor. In the course of their efforts, the instructors provide guidance and advice on how to conduct engineering research, write scientific and technical papers, and make presentations and discussions as appropriate. Grade evaluation method : The supervisor will evaluate according to the conditions indicated in the lesson plan. In particular, the theme presentation will be evaluated as professional ability (50%), and the report (50%). In the evaluation, the level of achievement will be evaluated for each item of (A) and (C) to (F) of the educational program, and the student will pass if the total evaluation score is 60% or more. If the evaluation score does not reach the passing score, guidance will be given and re-evaluation may be conducted.
Notice	Precautions on the enrollment : This is a class that requires study outside of class hours. A total of 45 hours of study is required per credit, including both class time and study outside class time. Follow the instructions of the instructor regarding study outside of class hours. Course advice : This subject is the most important main subject in the major. Therefore, students are expected to take the initiative in all aspects and do their best. In addition, in the second year, when students receive a bachelor's degree from the National Institution for Academic Degrees and University Evaluation (NIAD), they are required to submit a "Master's Course Plan" and a "Summary of the Results of the Master's Course". In addition to the above, it is necessary for the students to proceed with their research activities keeping in mind that the contents of the special research will be the basis for all of these. In addition, students are required to submit a research record at the end of the first and second semesters. Foundational subjects : All subjects Related subjects : General subjects to be studied in the major Attendance advice : This subject is the most important main subject in the major. Therefore, students are expected to take the initiative in all aspects and do their best. In addition, in the second year, when students receive a bachelor's degree from the National Institution for Academic Degrees and University Evaluation (NIAD), they are required to submit a "Master's Course Plan" and a "Summary of the Results of the Master's Course". In addition to the above, it is necessary for the students to proceed with their research activities keeping in mind that the contents of the special research will be the basis for all of these. In addition, students are required to submit a research record at the end of the first and second semesters.

Characteristics of Class / Division in Learning

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

Required subjects

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance (explanation by supervisor on how to proceed with the special research)	
		2nd	Students should plan their research for each special research theme. Create a "Learning Summary Course Plan".	
		3rd	Mid-term presentation (around the end of April)	
		4th	Research Activities	
		5th	Consult with your academic advisor and make a presentation at an off-campus conference at an appropriate time (while in the major course).	
		6th	Attendance at a lecture on engineering ethics	
		7th		
		8th		
	2nd Quarter	9th		
		10th		
		11th		
		12th		
		13th		
		14th		
		15th		

		16th	Writing a course plan for a general course of study Attendance at a lecture on engineering ethics	
2nd Semester	3rd Quarter	1st	Degree Application	
		2nd		
		3rd		
		4th		
		5th		
		6th		
		7th		
		8th		
	4th Quarter	9th		
		10th	Time to prepare the "Special Research Report" (December - January)	
		11th	Students compile the results of their research into a "Special Research Report" according to the designated outline and submit it to the department head (late January).	
		12th	Special research presentation (early February)	
		13th	Prepare for the presentation and submit the outline of the presentation to the steering committee member of the major department in charge (late January).	
		14th	Final presentation of the Special Study Report (mid-February)	
		15th	After peer review, revise the "Special Research Report" and submit it to the head of the department. After review, revise the "Special Research Report" and submit it to the department head.	
		16th		

Evaluation Method and Weight (%)

	Report	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	50	50	0	0	0	0	100
Basic Proficiency	0	0	0	0	0	0	0
Specialized Proficiency	50	40	0	0	0	0	90
Cross Area Proficiency	0	10	0	0	0	0	10

Tsuyama College	Year	2023	Course Title	Electrical Network Analysis

Course Information

Course Code	0026	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 2nd
Term	First Semester	Classes per Week	2
Textbook and/or Teaching Materials	Electrical Network Analysis(The Institute of Electrical Engineers of Japan)		
Instructor	NISHIO Kimihiro		

Course Objectives

Learning purposes :
We use network theory mathematically to solve circuit problems. Network theory does not solve all the problems of electric circuits, but the purpose is to solve these problems while showing the relation with the AC theory that has already been learned.

Course Objectives :
1. The network can be analyzed by signal transmission.
2. The two-terminal network can be expressed by the drive point impedance.
3. Reactance two-terminal network can be synthesized.
4. Can analyze a four-terminal network.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	The student can understand and accurately analyze the network.	The student can understand and analyze the network.	The student can almost analyze the network.	The student will not understand and analyze the network.
Achievement 2	The student can understand and accurately explain the two-terminal network.	The student can understand and explain the two-terminal network.	The student can almost explain the two-terminal network.	The student will not understand and explain the two-terminal network.
Achievement 3	The student can understand and accurately explain reactance two-terminal network.	The student can understand and explain reactance two-terminal network.	The student can almost explain reactance two-terminal network.	The student will not understand and explain reactance two-terminal network.
Achievement 4	The student can understand and accurately explain four-terminal network.	The student can understand and explain four-terminal network.	The student can almost explain four-terminal network.	The student will not understand and explain four-terminal network.

Assigned Department Objectives

Teaching Method

Outline	General or Specialized : Specialized Field of learning : Electrical and electronic Foundational academic disciplines : Engineering / Electrical and Electronic Engineering / Communication Network Engineering Relationship with Educational Objectives : This class is equivalent to "(2) Acquire basic science and technical knowledge". Relationship with JABEE programs : The main goal of learning / education in this class is (B). Course outline : In this lecture, the student will learn about network analysis and design or synthesis. The former is "to find the characteristics of the input and output when the internal network configuration is given." The latter is "design the internal network given the inputs and outputs."
Style	Course method : Classes will be held in the first semester due to class timetable. Courses are offered in 2 credit hours per week. Classes are centered around textbooks. Solve the exercises during class. Students are required to submit reports. Grade evaluation method : Exams (70%) + Report (30%). Examinations will be conducted a total of 1 time, and the evaluation ratios will be the same. Textbooks and notebooks are not allowed for the exam. For students who score less than 60 points at the end of the second semester, a retaking exam will be given with advance instructions if attendance and class attitude are good. The result of the retaking exam will be read as the result of the regular exam, with a maximum final grade of 60 points.

Notice	Precautions on the enrollment : This is a "class that requires study outside of class hours". Classes are offered for 15 hours per credit, but 30 credit hours are required in addition to this. Follow the instructions of your instructor for these studies. Course advice : Carefully check and understand the meanings and definitions of terms that appear in textbooks. Solve the examples and the exercises prepared at the end of each chapter and check the contents carefully. This course is based on Electric Circuit II, which students learned in the 4th year of the main course, and analyzes and designs various circuit networks. Foundational subjects : Electric Circuits II (4th year), Electronic Circuits (4th) Related subjects : System Control Engineering (Adv. 2nd) Attendance advice : It is recommended that you take notes while understanding the contents explained in the class. If you do not understand the content of the lesson, ask the teacher. If you are late for the start time, you will be treated as absent after 25 minutes.

Characteristics of Class / Division in Learning

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

Elective subjects

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance	
		2nd	Introduction of basic circuit network	
		3rd	Overview of two-terminal circuit and four-terminal circuit	Two-terminal circuit and four-terminal circuit
		4th	Response, Frequency characteristics	Response, Frequency characteristics
		5th	Immittance function	Immittance function
		6th	Reactance two-terminal network	Two-terminal network
		7th	Series circuit, Parallel circuit	Series circuit, Parallel circuit
		8th	Reactance function, Equivalent circuit of reactance circuit	Reactance function, Equivalent circuit of reactance circuit
	2nd Quarter	9th	Synthesis of reactance circuit	Synthesis of reactance circuit
		10th	Basic expression of four-terminal network	Basic expression of four-terminal network
		11th	Four-terminal network connection	Four-terminal network connection
		12th	Equivalent circuit of four-terminal network	Equivalent circuit of four-terminal network
		13th	Equivalent circuit of each network	Equivalent circuit of each network
		14th	Analysis method of each network	Analysis method of each network
		15th	(1st semester final exam)	
		16th	Return and commentary of exam answers	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Report	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

Tsuyama College	Year	2023	Course Title	Electronic Device Engineering

Course Information

Course Code	0027	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 2nd
Term	First Semester	Classes per Week	2
Textbook and/or Teaching Materials			
Instructor	NAKAMURA Shigeyuki		

Course Objectives

Learning purposes :
o acquire the basic knowledge necessary to understand solar cells, one of the electronic devices, and to understand their power generation principles. In addition, students will learn about the technologies necessary to improve the conversion efficiency and come up with ideas.
Course Objectives :1. To understand the fundamentals of semiconductor properties necessary for understanding electronic devices.
2. To understand solar cells as an application of electronic devices.
3.To be able to read technical papers in English in the original and summarize their contents.
◎4. To acquire the ability to debate based on technical papers.

Rubric

	Excellent	Good	Acceptable	Not acceptable	←変更
Achievement 1	To be able to quantitatively explain the energy levels of electrons in semiconductors.	To be able to qualitatively explain the energy levels of electrons in semiconductors.	Can explain roughly the energy level of electrons in a semiconductor.	Cannot explain the energy levels of electrons in semiconductors at all.	To be able to quantitatively explain the power generation mechanism of solar cells using an energy level diagram.
Achievement 2	To be able to qualitatively explain the power generation mechanism of solar cells using an energy level diagram.	To be able to explain the power generation mechanism of solar cells in broad terms using energy level diagrams.	Cannot explain the power generation mechanism of solar cells at all using an energy level diagram.	To be able to read technical papers in English and present their contents as well as related technologies.	Able to read technical papers in English and present the contents in Japanese.
Achievement 3	To be able to read technical papers in English and present their contents roughly in Japanese.	English Read a technical paper in English and be able to present the contents of the paper in Japanese.	Able to answer questions about the content of the presentation.	Able to answer about 80% of the questions about the content of the presentation.	Able to answer about 60% of the questions about the content of the presentation.

Assigned Department Objectives

Teaching Method

Outline	Specialized : Field of learning : Engineering/Electric and Elecronic Engineering/Electronic devices Foundational academic disciplines : Relationship with Educational Objectives :(2) Acquire basic science and technical knowledge Relationship with JABEE programs :The main goals of learning / education in this class are "(A), A-2:", also "A-1" is involved. Course outline :The rapid progress in science and technology today would not be possible without the development of electronic devices, which are key components. In this lecture, we will take up solar cells as an example of electronic devices and explain their principles and characteristics.In addition, much time will be devoted to explaining the latest technologies. Original papers in English will be also reviewed.
Style	Course method : Grade evaluation method :
Notice	Precautions on the enrollment : This is a class that requires study outside of class hours. A total of 45 hours of study is required per credit, including both class time and study outside class time. Follow the instructions of the instructor regarding study outside of class hours. Course advice : Foundational subjects : Related subjects : Attendance advice :

Characteristics of Class / Division in Learning

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

Elective subjects

Course Plan

			Theme	Goals

1st Semester	1st Quarter	1st	Guidance	Understand the left column.
		2nd	Electronic devices and semiconductors	Understand the left column.
		3rd	Basics of semiconductor properties	Understand the left column.
		4th	Operating principles and characteristics of solar cells	Understand the left column.
		5th	Recent Technology Trends	Understand the left column.
		6th	Recent Technology Trends	Understand the left column.
		7th	Recent Technology Trends	Understand the left column.
		8th	Recent Technology Trends	Understand the left column.
	2nd Quarter	9th	Each student is expected to read, summarize, and introduce the latest (approximately within the last two years) English technical papers on the fabrication of solar cells. Presentations on peripheral technologies are not allowed.	Perform the left column.
		10th	Presentation of your work and Q&A session	Perform the left column.
		11th	Presentation of your work and Q&A session	Perform the left column.
		12th	Presentation of your work and Q&A session	Perform the left column.
		13th	Presentation of your work and Q&A session	Perform the left column.
		14th	Presentation of your work and Q&A session	Perform the left column.
		15th	(1st semester final exam)	Perform the left column.
		16th	Return and commentary of exam answers	Understand the left column.

Evaluation Method and Weight (%)

	Examination	Presentation	Responding to questions	Behavior	Portfolio	Other	Total
Subtotal	50	40	10	0	0	0	100
Basic Proficiency	0	0	0	0	0	0	0
Specialized Proficiency	50	0	10	0	0	0	60
Cross Area Proficiency	0	40	0	0	0	0	40

Tsuyama College	Year	2023	Course Title	Power Electronics

Course Information

Course Code	0028	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 2nd
Term	First Semester	Classes per Week	2
Textbook and/or Teaching Materials	Textbook: Ned Mohan et al. Power Electronics (John Wiley & Sons, Inc.)		
Instructor	KOBAYASHI Toshiro		

Course Objectives

Learning purposes :
Understand the principles and features of various power conversion circuits, power devices, and control methods, and learn the principles of power conversion.

Course Objectives
1. Understand the application area and application field.
2. Understand power devices and control methods.
3. Understand the operating principle of major power conversion circuits.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	Be able to explain concretely the industrial application areas and application fields.	Explain basic application areas and application fields.	Understand basic application areas and application fields.	It has not reached the left.
Achievement 2	Explain in detail the types, structures and features of power devices and control methods.	Explain basic power devices and control methods.	Understand power devices and control methods.	It has not reached the left.
Achievement 3	Explain in detail the concept, types and operating principles of power conversion circuits.	Explain the operating principle of basic power conversion circuits	Understand the operation of basic power conversion circuits.	It has not reached the left.

Assigned Department Objectives

Teaching Method

Outline	General or Specialized : Specialized Field of learning : Electrical / Information / Control Foundational academic disciplines : Engineering / Electrical and Electronic Engineering / Power Engineering / Electrical Equipment Engineering Relationship with Educational Objectives : This class is equivalent to a learning goal in advance course "(2) Acquire knowledge in specialized technical fields related to electricity / electronics, information / control, and acquire the ability to utilize it for the design / policy / operation of machines and systems." Relationship with JABEE programs : The main goals of learning / education in this class is "(B) Deepening basic knowledge about technology, B-1 : To be able to acquire and explain the knowledge of specialized technical fields related to "electricity / electronics" and "information / control". " Course outline Understand the basic characteristics of power devices and the operating principles of typical circuits for power electronics technology widely used in industry. Students will also learn the basics of technology applied to various applications. Use English texts to improve technical English reading comprehension.
Style	Course method : Classes are conducted in the form of each student presenting the shared part. Report and exercise as appropriate to deepen understanding. Grade evaluation method : Presentation content ・ Evaluate based on presentation materials (40%) and assignments (60%). In principle, there is only one examination, but for those who scored less than 60 points at the final stage of the second semester, if their attendance and class attitude are good, they will be given advance directives and will be re-examined. The results of the re-examination shall be read as the results of the regular examination, with the maximum final score of 60 points.

Notice	Precautions on the enrollment : This is a class that requires study outside of class hours. A total of 45 hours of study is required per credit, including both class time and study outside class time. Follow the instructions of the instructor regarding study outside of class hours. Course advice : As preparatory learning in advance, review the basics of semiconductor power conversion learned in subjects such as electric circuits, electronic engineering, and power electronics. In semiconductor power conversion circuits, it is important to understand the operation of inductors and capacitors, which are the basic elements of electric circuits. Foundational subjects : Electrical and Electronic Basics II (2nd Year), Electronic Engineering (3rd), Electrical Circuit I, II (3rd, 4th), Electrical Equipment I, II (2nd, 3rd) Related subjects : Power Electronics (5th year), Electrical and electronic equipment (1st in advanced course) Attendance advice : Rather than the passive attitude of listening to the lecture, the lesson is regarded as a place to announce the results of the preparation and exchange opinions with teachers and other students, or as a place to ask questions and comments to the presenter from a critical point of view. If it is within 25 minutes of the start of class, it will be late, and 3 times late will result in 1 absence.

Characteristics of Class / Division in Learning

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

Elective subjects

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance	Understand the following contents respectively
		2nd	Power electronics concept	Explain what power electronics are.
		3rd	Features and fields of application	Explain the application fields of power electronics.
		4th	Basic components	Explain the basic circuit configuration.
		5th	Concept of operation and advantages and disadvantages	Explain the concept of operating principle.
		6th	About various power devices	Explain the types of power semiconductor elements.
		7th	Diode, thyristor	Explain the operating characteristics of diodes and thyristors.
		8th	Power transistor	Explain the operating characteristics of power transistors.
	2nd Quarter	9th	Power MOSFET	Explain the operating characteristics of power MOSFETs.
		10th	GTO, IGBT, etc.	Explain the operating characteristics of GTO and IGBT.
		11th	What is a power conversion circuit?	Explain the operating principle and application of power conversion circuits.
		12th	Converters and various formulas	Explain the outline and method of the converter.
		13th	Step-down converter	Explain the configuration and principle of the step-down converter.
		14th	Boost converter	Explain the configuration and principle of the step-up converter.
		15th	(Final test)	
		16th	Inverter and various methods	Explain the configuration and principle of the inverter.

Evaluation Method and Weight (%)

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

Tsuyama College	Year	2023	Course Title	Practice in Information System I

Course Information

Course Code	0032	Course Category	Specialized / Elective
Class Format	Seminar	Credits	School Credit: 1
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 2nd
Term	First Semester	Classes per Week	2
Textbook and/or Teaching Materials	Distributed original textbook. Books related to Linux system and programming.		
Instructor	KAWANAMI Hiromichi,KAWAI Masahiro		

Course Objectives

Learning purposes:
Learn the fundamental knowledge related to computer systems and the methodologies of software development. Further, gain imagination from studying, planning, implementing, and considering through problem resolution.

Course objectives:
1. To be able to explain fundamental mechanisms and configurations of computer systems.
2. To be able to explain the fundamental programming techniques and software developments.
3. To be able to address the applied problem by using programming techniques.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	The student can explain the fundamental mechanisms and configurations of computer systems including advantages and disadvantages concretely.	The student can explain the fundamental mechanisms and configurations of computer systems concretely.	The student can explain the fundamental mechanisms and configurations of computer systems.	The student cannot explain the fundamental mechanisms and configurations of computer systems.
Achievement 2	The student can explain the fundamental programming techniques and software developments including advantages and disadvantages concretely.	The student can explain the fundamental programming techniques and software developments concretely.	The student can explain the fundamental programming techniques and software developments.	The student cannot explain the fundamental programming techniques and software developments.
Achievement 3	The student can apply the programming techniques in problems at a high level.	The student can apply the programming techniques in problems.	The student can apply the programming techniques in problems by reference to example problems.	The student cannot apply the programming techniques in problems by reference to example problems.

Assigned Department Objectives

Teaching Method

Outline	General or Specialized: Specialized Field of learning: Information and control Foundational academic disciplines: Informatics, computer systems, and networks Relationship with Educational Objectives: This class is equivalent to "(2) The student has acquired knowledge of the following specialized technical fields for designing, manufacturing, and operation of machinery and systems." Relationship with JABEE programs: the main goal of learning /education in this class is "(A)," "(C)," and "(D)." Course outline: Learn the foundational programming techniques and software developments through study for mechanisms and configurations of computer systems and software development environments.
Style	Course method: Learn the mechanisms, configurations, and software developments of computer systems through using a Linux system, a scripting language, and C programming language. There are a total of six themes for the practice, and each theme is for two classes. The student must submit a report for each theme. Grade evaluation method: Reports(100%) Evaluate by six reports.

Notice	Precautions on the enrollment: This class is "Required outside of teaching hours course study." Therefore, this course consists of a total of forty-five hours of teaching and homework per one unit. The student should deal with the homework based on the instructions of the teacher. Attendance advice: Make sure to prepare for computer systems and software by using an original textbook. As exercises in this class are based on Basic Programming (2nd year in Communication and Information System Program) and Algorithms and Data Structures (3rd year in Communication and Information System Program), reviewing these lectures is strongly recommended. Foundational subjects: Basic Programming (2nd year in Communication and Information System Program), Algorithms and Data Structures (3rd year in Communication and Information System Program), Special Lecture on Information Systems (1st year in Advanced Engineering Course), and Information Science (2nd year in Advanced Engineering Course). Related subjects: Practice in Information System II (2nd year in Advanced Engineering Course) Course Advice: Should prepare same software development environments in another computer other than practice room. If a student is late on time from taking attendance to half of one period, the student is treated as late for the class. If a student is more than half of one period late in the class, the student will be treated as one absent.

Characteristics of Class / Division in Learning

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

Elective subjects

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance	Understand the course plan.
		2nd	Practice * Mechanisms of Linux and configurations of network	Address the assignment about mechanism of Linux and configurations of network.
		3rd	Practice * Mechanisms of Linux and configurations of network	Address the same issue with previous week and submit the report.
		4th	Practice * Software development environment	Address the assignment about software development environment.
		5th	Practice * Software development environment	Address the same issue with previous week and submit the report.
		6th	Practice * Programming (1)	Address the assignment about the programming (1).
		7th	Practice * Programming (1)	Address the same issue with previous week and submit the report.
		8th	Optional day * Coaching reports	Complete the incomplete report and submit it.
	2nd Quarter	9th	Practice * Programming (2)	Address the assignment about the programming (2).
		10th	Practice * Programming (2)	Address the same issue with previous week and submit the report.
		11th	Practice * Programming (3)	Address the assignment about the programming (3).
		12th	Practice * Programming (3)	Address the same issue with previous week and submit the report.
		13th	Practice * Programming (4)	Address the assignment about the programming (4).
		14th	Practice * Programming (4)	Address the same issue with previous week and submit the report.
		15th	Optional day * Coaching reports	Complete the incomplete report and submit it.
		16th	Final submission deadline of each report	Complete all reports submission.

Evaluation Method and Weight (%)

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

Tsuyama College	Year	2023	Course Title	Practice in Information System Ⅱ

Course Information

Course Code	0033	Course Category	Specialized / Elective
Class Format	Seminar	Credits	School Credit: 1
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 2nd
Term	Second Semester	Classes per Week	2
Textbook and/or Teaching Materials	Distributed original textbook. References: books related to programming techniques and software developments.		
Instructor	KAWANAMI Hiromichi,KAWAI Masahiro		

Course Objectives

Learning purposes:
Learn the fundamental methodologies for the construction of information systems. Gain imagination from studying, planning, implementing, and considering through problem resolution. Further, enhance communication skills related to summarizing achievements and making a presentation.

Course objectives:
1. To be able to explain fundamental methodologies of software developments.
2. To be able to study, plan, implement, consider, and make a presentation for problem resolution.
3. To be able to make a presentation that summarizes developed software by own plan.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	The student can explain the fundamental software developments comprehensibly.	The student can explain the fundamental software developments.	The student can explain the outline of the fundamental software developments.	The student cannot explain the outline of the fundamental software developments.
Achievement 2	The student can study, plan, implement, consider, and make a presentation for a problem resolution at a high level.	The student can study, plan, implement, consider, and make a presentation for a problem resolution.	The student can study, plan, implement, consider, and make a presentation for a problem resolution at the fundamental level.	The student cannot study, plan, implement, consider, and make a presentation for a problem resolution at the fundamental level.
Achievement 3	The student can make a presentation for own developed software comprehensibly.	The student can make a presentation for own developed software.	The student can make a presentation for the basic part of own developed software.	The student cannot make a presentation for the basic part of own developed software.

Assigned Department Objectives

Teaching Method

Outline	General or Specialized: Specialized Field of learning: Information and control Foundational academic disciplines: Informatics, computer systems, and networks Relationship with Educational Objectives: This class is equivalent to "(2) The student has acquired knowledge of the following specialized technical fields for designing, manufacturing, and operation of machinery and systems." Relationship with JABEE programs: the main goal of learning /education in this class is "(A)," "(C)," "(D)," and "(F)." Course outline: Learn the foundational skills for software developments through the development process. Further, complete a software application in a half year. Finally, make a presentation about its development.
Style	Course method: First, decide the development problem for each student and complete the software development according to methodologies such as sequentially creating documents for a plan, specification, and design. Second, make the first presentation about the result, get feedback, and modify the work with the feedback. Finally, make the second presentation about the final result. Grade evaluation method: Reports(70%) + Work(10%) + Presentation(20%)

Notice	Precautions on the enrollment: This class is "Required outside of teaching hours course study." Therefore, this course consists of a total of forty-five hours of teaching and homework per one unit. The student should deal with the homework based on the instructions of the teacher. Make sure to prepare the previous knowledge of the programming language for software development. Attendance advice: This class is based on Information System Development (3rd year in Communication and Information System Program). As this class is proceeded with system development exercises to learn a flow of software development method, reviewing the contents of Information System Development is strongly recommended. In addition, make sure to prepare the environment for software development on one's computer. Foundational subjects: Basic Programming (2nd year in Communication and Information System Program), Algorithms and Data Structures (3rd year in Communication and Information System Program), Information System Development (3rd year in Communication and Information System Program), Special Lecture on Information Systems (1st year in Advanced Engineering Course), and Information Science (1st year in Advanced Engineering Course). Related subjects: Practice in Information System I (2nd year in Advanced Engineering Course) Course Advice: Should create a program with the minimum specification for each target function, check the difference between the implementation and its specification, and modify it step-by-step. If a student is late on time from taking attendance to half of one period, the student is treated as late for the class. If a student is more than half of one period late in the class, the student will be treated as one absent.

Characteristics of Class / Division in Learning

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

Elective subjects

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Guidance	Understand the course plan.
		2nd	Practice * Software development according to an example	Understand the development flow through the software practice.
		3rd	Practice * Software development according to an example	Understand the development flow through the software practice.
		4th	Practice * Choice of the development problem and creation of the implementation document	
		5th	Practice * Presentation and discussion about the selected development problem	Modify the implementation document with feedback and submit it.
		6th	Practice * Analysis of the specification and creation of software requirements specification * Design and creation of the prototype	Design the prototype and create it through analyzing the specification and the creation of software requirements specification.
		7th	Practice * Design and creation of the prototype	Design the prototype and create it.
		8th	Practice * Design and creation of the prototype * Preparation for the presentation	Design the prototype and create it. Prepare a presentation for the developed software.
	4th Quarter	9th	Mid-Debriefing	Make a presentation about the interim progress of one's software.
		10th	Practice * Addition and modification of the program	Add functions to the program and modify it.
		11th	Practice * Addition and modification of the program	Add functions to the program and modify it.
		12th	Practice * Finish of the program and preparation for the presentation	Finish one's program and prepare for the presentation about it.
		13th	Debriefing	Make a presentation about the developed software.
		14th	Report writing * Creation of final report	Create the final report.
		15th	Optional day * Creation of the final report	Create the final report.
		16th	Report submission	Submit the final report.

Evaluation Method and Weight (%)

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

Tsuyama College	Year	2023	Course Title	Numerical Analysis

Course Information

Course Code	0034	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 2nd
Term	First Semester	Classes per Week	2
Textbook and/or Teaching Materials	Textbooks : MITSUIDA Yoshiro et al.,"Numerical Calculation Method 2nd Ed. New Version(Japanese)"(Morikita Pub.)		
Instructor	ONISHI Atsushi		

Course Objectives

Learning purposes :
It is necessary to understand the computer-specific errors, in order to execute calculations for a large scale engineering phenomena by a computer. it is also necessary to understand calculation that is suitable for computers and methods to obatin approximate solutions for problems for which there is no general solution method.
The purpose of this lecture is to understand these points.

Course Objectives :
1. To understand the various errors that occur on a computer.
2. To be able to explain the principles and characteristics of well-known numerical methods.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	The students can raise all names and characteristics of errors which occur in the calculation process and which are caused by the expression method of numbers in this class.	The students can raise names and characteristics of 80% of errors which occur in the calculation process and which are caused by the expression method of numbers in this class.	The students can raise names and characteristics of 60% of errors which occur in the calculation process and which are caused by the expression method of numbers in this class.	The students can raise only names and characteristics of less 60% of errors which occur in the calculation process and which are caused by the expression method of numbers in this class.
Achievement 2	The students can explain all principles and characteristics of the numerical calculation methods in this class.	The students can explain principles and characteristics of 80% of the numerical calculation methods in this class.	The students can explain principles and characteristics of 60% of the numerical calculation methods in this class.	The students can explain only principles and characteristics of less 60% of the numerical calculation methods in this class.

Assigned Department Objectives

Teaching Method

Outline	General or Specialized : Specialized Field of learning : Information System･Programming･Network Foundational academic disciplines : Information Science, Computer Engineering and related fields / High performance computing Relationship with Educational Objectives :This class is equivalent to "(2) Specialized technical fields pertaining to electrical/electronic engineering, and information/control systems". Relationship with JABEE programs : The main goal of learning / education in this class is "(B)". Course outline : Simulation is one of the essential part of technology development in any engineering field. In simulation, computer solve a mathematical model that describes an enginnering phenomena. This course provides understanding the calculations and their important points in computing on a computer.
Style	Course method : The class explanes the topics of numerical analysis using materials. Exercises will be given as much as possible. Some explanations that are not in textbook will based on handouts. In principle, preparation or review will be presented for each topics. Grade evaluation method : Exams (70%) + Reports(50%). Examinations will be conducted a total of 2 times, and the evaluation ratios will be even. The teacher does not carry out the reexamination without defects in the regular examination. If the teacher carry out a makeup exam, the teacher will show persons concerned requirements for retesting. Bringing textbook and notebook at examination is not permitted but depending on the situation. Examinations are based on the rubric but there is no guarantee that the examinations cover achievements in rubric.

Notice	Precautions on the enrollment : This is a class that requires study outside of class hours. A total of 45 hours of study is required per credit, including both class time and study outside class time. Follow the instructions of the instructor regarding study outside of class hours.As a preparatory study, the students are required to review mathematics previously. Course advice : This class is suitable for students who would like to know development of computer simulation systems and to acquire the basic knowledge of the development. The students are expected to have knowledge of mathematics they have learned. Foundational subjects : Foundamental Mathematics I(1), Differential and Integral I(2), Fundamental Linear Algebra(2), Differential and Integral II(3), Applied Mathematics II(4), Programming I(1), Programming II(2), Programming Language(3), Experiments of Electronic and Computer Systems(EC1) Attendance advice : If the student is late for the role call, he will be treated as a latecomer. The teacher considers that ths student was absent once when late twice. This class is based on knowledge of mathematics the studets have learned, like Differential and Integral, Linear Algebra and so on. Students should be able to refer to their texts and notes as approptiate. The preparatory work is the main part of the study outside of lecture. Then the students should be done. This work help the students' understanding of lecture. The computer solves many mathematical problems by the computer's own way. The student learn these characteristic solutions and the related problems in this class.

Characteristics of Class / Division in Learning

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

Elective subjects

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance	
		2nd	Errors	The students understand the relation between numerical representation and errors on a computer. The students understand the effects of errors of numerical calculations on a computer.
		3rd	Equation1(Bisection method, Newton's method)	The students can explain bisection method. The students can explain some major numerical algorithms for computers.
		4th	Equation2(Bare Stow method)	The students can explain bare stow method. The students can explain some major numerical algorithms for computers.
		5th	Equation system1(Gauss-Jordan Iteration method)	The students can explain Gauss-Jordan iteration method. The students can explain some major numerical algorithms for computers.
		6th	Equation system2(Gauss-Seidel method)	The students can explain Gauss-Seidel method. The students can explain some major numerical algorithms for computers.
		7th	Interpolation1(Lagrange's Interpolation)	The students can explain Lagrange's interpolation. The students can explain some major numerical algorithms for computers.
		8th	Mid-term exam	
	2nd Quarter	9th	Return and commentary of exam answers,Interpolation2(Least Square method)	The students can explain least square method. The students can explain some major numerical algorithms for computers.
		10th	Numerical integration(Trapezoidal rule, Simpson's rule)	The students can explain Trapezoidal rule. The students can explain Simpson's rule. The students can explain some major numerical algorithms for computers.
		11th	Ordinary differential equation(Euler’s formula, Runge-Kutta method)	The students can explain Euler’s formula. The students can explain Runge-Kutta method. The students can explain some major numerical algorithms for computers.
		12th	Partial differential equation1(Parabolic type)	The students can explain the elucidation of parabolic type partial differential equation. The students can explain some major numerical algorithms for computers.
		13th	Partial differential equation2(Hyperbolic type, Elliptic type)	The students can explain the elucidation of hyperbolic type partial differential equation. The students can explain the elucidation of elliptic type partial differential equation. The students can explain some major numerical algorithms for computers.
		14th	Inverse matrix	The students can explain how to find inverse matrix. The students can explain some major numerical algorithms for computers.
		15th	(Final exam)	
		16th	Return and commentary of exam answers	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Report	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

Tsuyama College	Year	2023	Course Title	Image Processing

Course Information

Course Code	0035	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 2nd
Term	First Semester	Classes per Week	2
Textbook and/or Teaching Materials	Textbooks : Nothing, Reference : Resources on the Internet, such as related books		
Instructor	YABUKI Noboru		

Course Objectives

Learning purposes :
To understand the concept of image processing and image processing methods for practical use of image processing technology. In addition, to understand how to configure an image processing system and to learn how to configure the system.

Course Objectives :
To understand the field of image processing that has not been covered in other subject areas.
1. To be able to understand and explain image processing methods.
2. To understand how to configure image processing systems.
3. To deepen the understanding through exercises, research presentations and assignment reports.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	To be able to explain in detail the methods of image processing, including applications.	To be able to explain the basic methods of image processing in detail.	To be able to explain the basic methods of image processing (presentation).	Cannot explain the methods of image processing.
Achievement 2	To be able to construct an image processing system in detail and explain it fully.	To be able to construct an image processing system in detail.	To be able to explain the basic configuration of an image processing system (examination).	Cannot explain the configuration of an image processing system.
Achievement 3	Be able to serve as a role model for other students in research presentations and assignment report writing.	To be able to make sufficient research presentations and reports.	Be able to make a presentation and write a report.	Cannot make a presentation or write a report.

Assigned Department Objectives

Teaching Method

Outline

General or Specialized : Specialized
Field of learning : Information / Control
Foundational academic disciplines : Engineering / Electrical and Electronic Engineering / Instrumentation Engineering
Relationship with Educational Objectives :
This class is equivalent to "(2) Knowledge in the following specialized technical fields can be applied to mechanical and system design, manufacture, and operations. Specialized technical fields pertaining to electrical/electronic engineering, and information/control systems."

Relationship with JABEE programs :
The main goal of learning / education in this class are "(B)... B-1...".

Course outline :
With the development of computers, image processing technology has come to be used in all fields of industry. In this course, students will learn the concept of image processing and image processing methods for using image processing technology, and check the actual processing results. In addition, students will be explained how to construct an image processing system by using examples.

Style

Course method :
The basic information of image processing will be explained first, and then the students will present their research on various image processing methods. In other words, the students are asked to report the results of their investigations and examples of the class contents, and the missing items are explained. In addition, students are required to learn the configuration of the image processing system as extra time to deepen their understanding.

Grade evaluation method :
Examination(60%)+Research presentation (20%)+ assignment report, etc. (20%)
・ Examination allow notebooks to be brought in.
・ For those who have less than 60 points in the regular test, supplementary lessons will be given, and If the result of the examination to check the level of understanding is 60 points or more, the result of the corresponding examination will be read as 60 points.
Re-examination will not be conducted.

List of Research presentation
Sampling theorem, density transform, histogram, spatial filtering, smoothing, edge extraction, Histogram, Spatial Filtering, Smoothing, Edge Extraction, Fourier Transform, Frequency Filtering, Binarization, Binary Image Processing, Line Detection, Color Image, Pattern Recognition, Video Image Processing, Image Coding, etc.
Lessons Learned in Extra Time
* Research on the class contents and prepare presentation materials
* Configuration of image processing systems and preparation of assignment reports
Content of the report
Objectives
Flow of the image processing system
Summary
(Progress report of the system configuration will be given during the lecture.)

Notice	Precautions on the enrollment : For network program choosers, students must take this class (no more than one-third of the required number of class hours missed) in order to complete the 5th year course. This is a class that requires study outside of class hours. A total of 45 hours of study is required per credit, including both class time and study outside class time. Follow the instructions of the instructor regarding study outside of class hours. Course advice : As a preparatory study, students should research the applications of using images. This course is a subject to study image processing and image processing systems based on the content learned in the 4th year (Information Systems, Information Mathematics) and the 5th year (System Programming) of this course. Foundational subjects : Differential and Integral Ⅰ, Ⅱ(2nd,3th), Applied Mathematics Ⅰ, Ⅱ(E4th,C4th). Related subjects : Digital Signal Processing(EC-2nd), etc. Attendance advice : There is a certification examination related to image processing (Image Processing Engineer Certification Examination), and it would be a good idea to challenge this examination. Students who have not taken imaging courses in this course should actively seek advice from their instructors if they have any questions about research methods or content. Check for late arrivals in quarters of class time. Late arrivals of 25 minutes or more are treated as one absence. Students are required to submit a report on their overtime study after all lectures.

Characteristics of Class / Division in Learning

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

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Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance, overview and history of image processing	Understand the overview of image processing
		2nd	Basics of digital images, Application fields of image processing, Examples of image processing applications	Be able to explain the basics of image processing
		3rd	Basics of image processing systems	To understand the basics of image processing systems
		4th	To be able to explain the structure of input/output devices (digital cameras, etc.)	To be able to explain the structure of input/output devices
		5th	Presentation of assignment	Presentation of assignment Questions and answers
		6th	Presentation of assignment	Presentation of assignment Questions and answers
		7th	Presentation of assignment	Presentation of assignment Questions and answers
		8th	Presentation of assignment	Presentation of assignment Questions and answers
	2nd Quarter	9th	Presentation of assignment	Presentation of assignment Questions and answers
		10th	Presentation of assignment	Presentation of assignment Questions and answers
		11th	Presentation of assignment	Presentation of assignment Questions and answers
		12th	Configuration of image processing system	Preparation of the concept of image processing system configuration
		13th	Creation of algorithms for image processing system	Completion of creation of algorithms for the image processing system
		14th	Summary of image processing and final exam of the previous semester	Confirmation of summary of image processing so far and the final exam
		15th	(Final exam of the first semester)	Check what you are learning.
		16th	Return and commentary of exam answers	Review areas where learning is insufficient.

Evaluation Method and Weight (%)

	Examination	Presentation	Assignment	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

Tsuyama College	Year	2023	Course Title	Special Lecture on Digital Signal Processing

Course Information

Course Code	0036	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 2nd
Term	Second Semester	Classes per Week	2
Textbook and/or Teaching Materials	Lecture slide PDF / Reference book : Koichi SAKAI, "Digital Signal Processing for Technical College Students (高専学生のためのディジタル信号処理)" (Coronasha)		
Instructor	KAWANAMI Hiromichi		

Course Objectives

Learning Purposes :
Digital signal processing (DSP) is widely used for communication, information processing, control, medical electronics and so on. In this lecture, learn a basic theory of DSP and how to program the basic idea.

Course objectives :
◎Understand essential terms on signal processing which a information technology expert should know.
1. Learn Fourier series, Discrete Fourier transform and z-transform and analysis of fundamental periodical function.
2. Learn relationship between parameters of 2nd order system and its transfer function.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	The student can concretely explain and apply function analysis using Fourier series and Fourier Transform.	The student can explain function analysis using Fourier series and Fourier Transform.	The student can explain function analysis using Fourier series and Fourier Transform.	The student can not explain function analysis using Fourier series and Fourier Transform.
Achievement 2	The student can concretely explain and apply function analysis using z-transform.	The student can explain function analysis using z-transform.	The student can explain function analysis using z-transform.	The student can not explain function analysis using z-transform.
Achievement 3	The student can concretely explain and apply 2nd order transfer function.	The student can concretely explain 2nd order transfer function.	The student can explain 2nd order transfer function.	The student can not explain 2nd order transfer function.

Assigned Department Objectives

Teaching Method

Outline	General or Specialized : Specialized Field of learning : Information theory, Control Foundational academic disciplines : Engineering/Electric and Electronic Engineering/System Engineering Relationship with Educational Objectives : This class is equivalent to "(2) Acquire knowledge in specializedtechnical fields related to electricity / electronics and information / control, and acquire the ability to utilize it for the design, manufacture, and operation of machines and systems". Relationship with JABEE programs : The main goal of learning / education in this class is "B". Course outline : Study the basic theory on digital signal processing and learn a technique to construct the algorithm on a DSP device.
Style	Course method : Lectures are given using presentation slides. Exercises are also given to confirm students' understanding. Grade evaluation method : Examination : 75 % (final examination), Exercise: 25 % For students score less than 60 points at the end of the last semester, a retaking exam will be given with advance instructions if attendance and class attitude are good. The maximum points after the retaking exam is 60 points.
Notice	Precautions on the enrollment : This is a class that requires study outside of class hours. A total of 45 hours of study is required per credit, including both class time and study outside class time. Follow the instructions of the instructor regarding study outside of class hours. Course advice : Preparatory study using the reference book and a manual of "octave" or "matlab" is recommended. This lecture deepen theories of digital signal processing, in which the students learned in Control Engineering (4C), Communication Engineering (4E) and Digital Signal Processing (5C) and conducts signal processing using real data. Foundational subjects : Differential and Integral I (2 year), Differential and Integral II (3), Applied Mathematics II (4E, 4C), Electrical Circuits System (4C), Control Engineering (4C), Communication Engineering (4E), Digital Signal Processing (5C). Related subjects : Advanced Control Engineering (EC2) Attendance advice : This class uses fundamental knowledge of mathematical analysis.

Characteristics of Class / Division in Learning

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

Elective subjects				
Course Plan				
			Theme	Goals
2nd Semester	3rd Quarter	1st	Guidance / Introduction to digital signal processing	
		2nd	Fourier series (1)	
		3rd	Fourier series (2)	
		4th	Exercise on Fourier series	
		5th	Fourier transform (1)	
		6th	Fourier transform (2)	
		7th	Exercise on Fourier transform and inverse Fourier transform	
		8th	Sampling theorem	
	4th Quarter	9th	Discrete Fourier transform (1)	
		10th	Discrete Fourier transform (2)	
		11th	Exercise on Discrete Fourier transform	
		12th	z-transform (1)	
		13th	z-transform (2)	
		14th	Linear time Invariant System	
		15th	Examination	
		16th	Returning and commentary on the examination	

Evaluation Method and Weight (%)			
	Examination	Exercise	Total
Subtotal	75	0	75
Basic Proficiency	0	0	0
Specialized Proficiency	75	0	75
Cross Area Proficiency	0	0	0

Tsuyama College	Year	2023	Course Title	Industrial Mathematics

Course Information

Course Code	0037	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 2nd
Term	First Semester	Classes per Week	2
Textbook and/or Teaching Materials	Textbooks : Haruto Ohta, "Let's Start Topological Space" (Nihonhyoronsha), Reference Books : Haruto Ohta, "Let's Solve Topological Space" (Nihonhyoronsha)		
Instructor	YOKOTANI Masaaki		

Course Objectives

Learning purposes : Learn topology and its way of thinking.

Course Objectives :
1. Acquire the knowledge of mathematics, computational skills, and applied skills necessary to solve basic engineering problems.
2. Understand Euclidean geometry and topology.
3. Understand Euclidean space and its shapes.
4. Understand the deformation and mapping of figures.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	Have mastered the applied skills of mathematics necessary to solve basic engineering problems.	Be familiar with the knowledge of mathematics and have mastered computational skills necessary to solve basic engineering problems.	Have acquired the knowledge of mathematics necessary to solve basic engineering problems.	Insufficient knowledge of mathematics and calculation skills necessary to solve basic engineering problems.
Achievement 2	Understand the relationship between isometric transformations and joint transformations.	Understand the concept of topology.	Understands Euclidean geometry and similar geometry.	Lack of understanding of Euclidean geometry and topology.
Achievement 3	Understands figure crafting, graphs, and self-similar figures.	Understand the concept of figures from a topological point of view.	Understand distance and Euclidean space.	Lack of understanding of the concept of Euclidean space and figures.
Achievement 4	Understand the sequence of points in a shape and its convergence.	Understand the nature of mapping.	Understand that the deformation of a figure is represented by a map.	There is a lack of understanding of the deformation of figures and the sequence of points.

Assigned Department Objectives

Teaching Method

Outline	General or Specialized : Specialized Field of learning : Common and basics of natural science Foundational academic disciplines : Mathematical science / mathematics / mathematics in general Relationship with Educational Objectives : This class is equivalent to "(1) To deepen the knowledge of natural science subjects centered on mathematics and physics, broaden their knowledge of the humanities and social sciences, and acquire the ability to apply it as basic academic ability related to mechanical / control system engineering and electronic / information system engineering". Relationship with JABEE programs : The main goals of learning / education in this class are "(A), A-1". Course outline : One way to solve problems that occur in engineering is to grasp the essence of the phenomenon and cut it down from what you can understand. The significance of this lecture is to learn how to see and use useful things in such cases. Topology is a discipline that examines the property of maintaining invariance even when a figure is continuously deformed. Through this, we learn how to see what is invariant, that is, what captures the essence.
Style	Course method : Classes will be centered on board writing, but at the same time, as much exercise time as possible will be provided so that students can understand the content of the lecture more deeply and acquire the ability to solve problems on their own. Grade evaluation method : Evaluate by regular examination (60%) and report (40%). For students whose grades at the end of the first semester are less than 60 points, a re-test or report assignment will be given with advance instructions if attendance and class attitude are good. Students who pass the re-test or the report assignment will receive a final grade of 60 points.

Notice	Precautions on the enrollment : This is a class that requires study outside of class hours. A total of 45 hours of study is required per credit, including both class time and study outside class time. Follow the instructions of the instructor regarding study outside of class hours. Course advice : ・ As a preparatory study to be conducted in advance, review the contents of basic mathematics I, basic mathematics II, calculus I, calculus II, and basic linear algebra, which are the basic subjects. ・ It is important to make sure to prepare and review, and to understand the lecture contents more deeply by solving the exercises on your own. Foundational subjects : Basic Mathematics I (1st year), Basic Mathematics II (1), Calculus I (2), Calculus II (3), Basic Linear Algebra (2) Related subjects : Subjects of each specialized department Attendance advice : It is important to understand the content of the lecture well and solve the problem by yourself. I want you to value finding a solution on your own. If you are late a lot, you may be treated as absent after giving a warning.

Characteristics of Class / Division in Learning

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

Elective subjects

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance, Euclidean geometry Learning content outside class hours: Report assignment (1) "Euclidean geometry and topology"	Understand congruence transformation and become familiar with the properties of invariant figures under congruence transformation.
		2nd	Similar geometry Learning content outside class hours: Report assignment (1) "Euclidean geometry and topology	Understand similarity transformations and become familiar with the properties of invariant figures under similarity transformations.
		3rd	topology Learning content outside class hours: Report assignment (1) "Euclidean geometry and topology	Familiarize yourself with the idea of topology.
		4th	Isometric transformation and joint transformation Learning content outside class hours: Report assignment (1) "Euclidean geometry and topology	Understand the relationship between isometric transformation and joint transformation.
		5th	Exercise (Euclidean geometry and topology) Learning content outside class hours: Report assignment (1) "Euclidean geometry and topology	
		6th	Distance and Euclidean space Learning content outside class hours: Report assignment (2) "Euclidean space and its figures"	Familiarize yourself with distance and Euclidean space.
		7th	Shape Learning content outside class hours: Report assignment (2) "Euclidean space and its figures"	Familiarize yourself with some examples of shapes in Euclidean space.
		8th	Crafting figures, graphs, and self-similar figures Learning content outside class hours: Report assignment (2) "Euclidean space and its figures"	Familiarize yourself with figure work, graphs, and self-similar figures.
	2nd Quarter	9th	Set and logic Learning content outside class hours: Report assignment (2) "Euclidean space and its figures"	Familiarize yourself with sets and logic.
		10th	Exercise (Euclidean space and its figures) Learning content outside class hours: Report assignment (2) "Euclidean space and its figures"	
		11th	Shape transformation Learning content outside class hours: Report assignment (3) "Transformation and mapping of figures"	Understand the basic properties of figure deformation and represent the deformation by mapping.
		12th	Map Learning content outside class hours: Report assignment (3) "Transformation and mapping of figures"	Familiarize yourself with the nature of mapping.
		13th	Sequences and point sequences of figures Learning content outside class hours: Report assignment (3) "Transformation and mapping of figures"	Understand the sequence of numbers and the sequence of points of figures, and show convergence by the ε-N theory.
		14th	Exercise (transformation and mapping of figures) Learning content outside class hours: Report assignment (3) "Transformation and mapping of figures"	

		15th	(final exam)	
		16th	Return and commentary of the final exam answer	

Evaluation Method and Weight (%)

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

Tsuyama College	Year	2023	Course Title	Scientific Investigation

Course Information

Course Code	0038	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 2nd
Term	Second Semester	Classes per Week	2
Textbook and/or Teaching Materials	Handouts and other materials will be distributed as appropriate.		
Instructor	YAMAGUCHI Daizo		

Course Objectives

Learning purposes : When selecting a machine material, it is important to fully understand its properties and to judge how it should be used. In this class we will learn how to evaluate the properties of mechanical materials, and in group work we will learn what the results mean and what we need to pay attention to when evaluating them.

Course Objectives :
1. To understand the methods of investigating the properties of mechanical materials and to be able to select the required evaluation method.
2. To be able to judge which materials are most suitable for the required performance.
3. To be able to draw up an evaluation and analysis plan.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	Be able to explain how to investigate the properties of materials and select the required evaluation methods.	Understand how to investigate the properties of materials and be able to work collaboratively in a team to select the required evaluation method.	Understand how to investigate the properties of materials with the advice of a supervisor and be able to select the necessary evaluation methods.	Not reached the left column.
Achievement 2	It is possible to determine which materials are most suitable for the required performance.	The ability to work as a team to determine which materials are most suitable for the required performance.	With the advice of a supervisor, be able to judge what materials are most suitable for the required performance.	Not reached the left column.
Achievement 3	Be able to develop an evaluation and analysis plan.	Be able to work in a team to develop a collaborative evaluation and analysis plan.	Be able to develop an evaluation and analysis plan with the advice of a supervisor.	Not reached the left column.

Assigned Department Objectives

Teaching Method

Outline	General or Specialized : Specialized Field of learning : Common and basic natural sciences Foundational academic disciplines : Engineering / Materials / Mechanics of materials / Materials evaluation Relationship with Educational Objectives : This class is equivalent to "(1) Acquire basic science and technical knowledge". Relationship with JABEE programs : The main goals of learning / education in this class is (A). Course outline : When selecting a machine material, it is important to fully understand its properties and to judge how it should be used. In this course, students will learn how to evaluate the properties of mechanical materials, and in group work, they will learn what the evaluation results mean and what to pay attention to when evaluating them.
Style	Course method : Each group will research, study and make a presentation on the evaluation, analysis equipment and research field. The teacher will assist the students in their presentations and they will submit a report by the next week. Students are expected to prepare for the next lesson and understand the meaning of technical terms. Grade evaluation method : (1) Distribution of marks: examination (report method): 80%, presentation content: 20%. (2) Evaluation criteria: The basic content and understanding of the items listed in the achievement objectives and their basic application will be the evaluation criteria. 60 points or more is a passing score. (3) Re-examination: Students will be re-examined only once by oral examination. (3) Retest: Only one retest by oral examination will be given; however, a retest may be given if the subject in question does not meet the standard. A special report may also be substituted.

Notice	Precautions on the enrollment : This is a class that requires study outside of class hours. A total of 45 hours of study is required per credit, including both class time and study outside class time. Follow the instructions of the instructor regarding study outside of class hours. Course advice : It is essential that students prepare for the class by communicating and reviewing with their teammates, and that they maintain a regular interest in mechanical materials. Foundational subjects : Applied Chemistry (all 4th year), Chemistry II (3rd), Materials Science (M 2nd), Mechanics of Materials I (M 3rd), Mechanics of Materials II (M 4th), Electrical and Electronic Materials (E 5th). Related subjects : Functional Materials Science (MS 2nd), Strength of Materials (MS 2nd). Attendance advice : No previous learning of analytical instruments in the sciences is necessary, but students should be curious and actively seek to acquire new knowledge. Students are expected to study independently so that they can understand the basic purposes and principles of analytical instruments. Students who enter the room more than 15 minutes after the start of the class will be treated as absent.

Characteristics of Class / Division in Learning

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

Elective subjects

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Guidance (Study outside class time: Assignment (1) Materials assessment methods (overview of different methods))	Understand how the class is run.
		2nd	Mechanical characterisation (tensile, compression, bending, hardness and impact tests) (Study outside class time: Assignment (2) Tensile and compression tests).	Understand typical mechanical properties evaluation methods.
		3rd	Preparation of Presentation Slides I (Study outside class time: Assignment (3) Bending Examination)	Work in groups to produce a slide about the evaluation device.
		4th	Preparation of presentation slides II (Study outside class time: Assignment (4) Hardness test)	Students work in groups to prepare slides on phenomena and theories.
		5th	Preparation of presentation slides III (Study outside class time: Assignment (5) on the impact test)	Each group will prepare a slide presentation on an application in a real company.
		6th	Presentation by group 1 (Study outside class time: preparation of assignment (6) by group 1)	Be able to understand the content of the presentation.
		7th	Presentation group 2 (Study outside class time: assignment (7) preparation of group 2)	Be able to understand the content of the presentation.
		8th	Presentation by 3 groups (Study outside class time: Assignment (8) Preparation of 3 groups)	Be able to understand the content of the presentation.
	4th Quarter	9th	Evaluation of mechanical materials (XRD, SEM, TEM) (Study outside class time: Assignment (9) XRD)	Be able to understand typical mechanical material evaluation methods.
		10th	Preparation of presentation slides I (Study outside class time: Assignment (10) SEM)	Work in groups to produce slides about the analyser.
		11th	Preparation of presentation slides II (Study outside class time: Assignment (11) TEM)	In groups, prepare a slide presentation on the principles of evaluation and analysis.
		12th	Presentation by group 1 (Study outside class time: preparation of assignment (12) by group 1)	Be able to understand the content of the presentation.
		13th	Presentation group 2 (Study outside class time: preparation of assignment (13) group 2)	Be able to understand the content of the presentation.
		14th	Presentation by group 3 (study outside class time: assignment (14) preparation by group 3)	Be able to understand the content of the presentation.
		15th	Completing the report	Correct inadequate report content.
		16th	Summary	

Evaluation Method and Weight (%)

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

Tsuyama College	Year	2023	Course Title	System Control Engineering

Course Information

Course Code	0039	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 2nd
Term	Second Semester	Classes per Week	2
Textbook and/or Teaching Materials	テキストとなる資料を配布する。		
Instructor	YAGI Hideyuki		

Course Objectives

学習目的：伝達関数で表現されたシステムに対して時間領域で表現された状態空間モデルについて説明でき，システムの可制御性と可観測性の概念を理解する。

到達目標：
1.実在システムから状態変数モデルが構築できる。
2.状態方程式の解法を知り，解を求めることができる。
3.可制御，可観測について理解し，系の可制御，可観測性が判定できる。
4.状態フィードバックによって系の極を指定できる。

Rubric

	優	良	可	不可
評価項目1	複雑な問題に対し状態空間モデルの理論を適用することができる。	状態空間モデルに関する理論を理解できる。	状態空間モデルに関する基礎的な理論を理解できる。	左記に達していない。
評価項目2	状態方程式の座標変換に関して発展的に理論を適用できる。	状態方程式の座標変換を理解できる。	状態方程式の基礎的な座標変換を理解できる。	左記に達していない。
評価項目3	システムの可制御性と可観測性の概念に関して発展的に理論を適用できる。	システムの可制御性と可観測性の概念に関する理論を理解できる。	システムの可制御性と可観測性の概念に関する基礎的な理論を理解できる。	左記に達していない。
評価項目4	応用的な問題に対し，状態フィードバックによる制御系設計理論を適用できる。	状態フィードバックによる制御系設計について理解できる。	状態フィードバックによる基礎的な制御系設計について理解できる。	左記に達していない。

Assigned Department Objectives

Teaching Method

Outline	一般・専門の別：専門 学習の分野：情報・制御 基礎となる学問分野：工学/電気電子工学/制御工学 専攻科学習目標との関連：本科目は専攻科学習目標「(1) 数学、物理を中心とした自然科学系の科目に関する知識を深め、機械・制御システム工学および電子・情報システム工学に関する基礎学力として応用できる。」に相当する科目である。 技術者教育プログラムとの関連：本科目が主体とする学習・教育到達目標は「(B) 専攻分野に関連する知識理解を深化させ，それらを応用することができる」である。 授業の概要：本講義では，モデル化されたシステムを現代制御理論により解析する。これらシステムの安定論，可制御・可観測性，構造解析など状態方程式を基に統一的に論ずる。
Style	授業の方法：複雑なシステムのモデル化から制御設計手法まで，「倒立２輪車両ロボット」の制御モデル例を交えながら講義する。更に，理解が深まるように，レポート課題を課す。 成績評価方法：定期試験の結果を評価する（７０%）。レポート課題などの提出物の内容を評価する（３０%）。レポート課題の提出期限が守られていない場合は，最大２０%までの評価とする。 理解度が不十分であると感じられる部分は補講を行い，再試を行う場合もある。再試の結果は上限６０点として定期試験結果に入れる。
Notice	履修上の注意：本科目は「授業時間外の学修を必要とする科目」である。当該授業時間と授業時間外の学修を合わせて，１単位あたり４５時間の学修が必要である。授業時間外の学修については，担当教員の指示に従うこと。 履修のアドバイス：事前に行う準備学習として，本科制御工学で学んだ内容を理解していることが望ましい。 基礎科目：制御工学（電気電子，情報４），制御工学特論（電気電子５）など 関連科目：線形代数学（専１年），回路網解析（専２）など 受講上のアドバイス：本講義では線形代数の知識を駆使することになる。行列演算等はコンピュータを用いて効率的に計算できるが，基本的な計算はハンドワークによって確認する必要がある。また，与えられる課題を遅延なくこなすことも重要である。 授業の開始時に出欠をとり，その際返事がなく，その後入室をしてきた者は遅刻とする。遅刻３回で１回の欠席とする。

Characteristics of Class / Division in Learning

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

選択

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	・ガイダンス	倒立２輪車両の安定化実例
		2nd	・動的システムと状態方程式	状態方程式の計算

		3rd	・システムモデルと線形化（１）	電気回路のモデル化
		4th	・システムモデルと線形化（２）	タンクシステムのモデル化
		5th	・システムモデルと線形化（３）	倒立２輪車両のモデル化
		6th	・システムモデルと線形化（４）	倒立２輪車両のモデル化
		7th	・状態方程式の解とその解法	状態方程式の微分方程式の解の計算
		8th	・可制御性，可観測性と判定法	可制御性，可観測性の解法
	4th Quarter	9th	・システムの座標変換（１）	可制御正準形式への変換
		10th	・システムの座標変換（２）	可観測正準形式への変換
		11th	・線形システムの構造解析	最小実現を求める
		12th	・システムの安定性とその判別	安定性を求める
		13th	・状態フィードバックによる極指定	コントローラを設計する
		14th	・出力フィードバックによる極指定	コントローラを設計する
		15th	期末試験	
		16th	・答案の返却と解説	

Evaluation Method and Weight (%)

	試験	発表	相互評価	自己評価	課題	小テスト	Total
Subtotal	70	0	0	0	30	0	100
基礎的能力	0	0	0	0	0	0	0
専門的能力	70	0	0	0	30	0	100
分野横断的能力	0	0	0	0	0	0	0

Tsuyama College	Year	2023	Course Title	Long Term Internship

Course Information

Course Code	0040	Course Category	Specialized / Elective
Class Format	Practical training	Credits	Academic Credit: 2
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 2nd
Term	Intensive	Classes per Week	
Textbook and/or Teaching Materials			
Instructor	SAEKI Fumihiro,TERAMOTO Takayuki,KONISHI Daijiro		

Course Objectives

Learning purposes :
The purpose of the internship is to deepen knowledge and improve research ability so as not to be separated from the technology of the real world. Students in the advanced course are required to carry out about 30 hours of off-campus training as part of Thesis Work. However, it is thought that there are many items that cannot be learned in the short time of 30 hours, so we have made it possible to select long-term internships (about 4 weeks, about 140 hours) as elective courses (2 credits) from the above mentioned short-term off-campus training.

Course Objectives :
1. Explain the training content from a professional perspective through collaborative activities such as learning and research in collaboration with society
◎ Can recognize the responsibility and originality that engineers have on society
◎ Through collaborative activities, you can understand your role and communicate to work appropriately with others.
◎ You can design your own career through corporate activities

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	The content of the training can be explained in reports and presentations from a professional point of view so that readers and the audience can fully understand the content of the training.	The content of the training can be explained in reports and presentations from a professional point of view so that readers and the audience can understand the content of the training.	The content of the training can be explained in reports and presentations.	You have not reached the level shown on the left.
Achievement 2	Understand and fully explain the responsibilities and creativity that companies owe to society.	Understand and explain the responsibilities and creativity that companies owe to society.	Show the responsibilities and creativity that companies owe to society.	You have not reached the level shown on the left.
Achievement 3	Through practical training, you can understand your role and communicate sufficiently with others (by presentation, etc.).	Through practical training, you can understand your role and communicate with others (by presentation, etc.).	Through practical training, you can communicate with others (by presentation, etc.).	You have not reached the level shown on the left.
Achievement 4	Utilizing the practical training experience at the company, you can think about your career systematically and explain it sufficiently.	Utilizing the practical training experience at the company, you can think about your career systematically and explain it.	Utilizing the practical training experience at the company, you can explain your career .	You have not reached the level shown on the left.

Assigned Department Objectives

Teaching Method

Outline	* Relationship with practical work: This subject is practiced at a private company outside the college with the aim of deepening knowledge and improving research ability so as not to be separated from the technology of the real world. It is set as a 2-credit course with the requirement of conducting practical training for about 4 weeks (about 140 hours). General or Specialized : Specialized Field of learning : Experiment / practice Foundational academic disciplines : Engineering / Mechanical Engineering / Electrical and Electronic Engineering / Electronic Control Engineering / Information Engineering Relationship with Educational Objectives : This subject corresponds to the major learning goal "(1) Students deepen their knowledge of natural science subjects centering on mathematics and physics, broaden their knowledge of the humanities and social sciences, and apply them as basic academic skills in mechanical and control system engineering and electronic and information system engineering." and "(4) By voluntarily and actively exploring and promoting special research, students will acquire the ability to identify problems and solve problems that are essential for an engineer, that is, the ability to design and research to produce creative results, and to acquire research results. You can make presentations and communicate with other researchers and engineers by making presentations at academic conferences. Furthermore, by attending special lectures on engineering ethics and studying engineering ethics, students will be able to broadly understand engineering ethics. Through participation in off-campus practical training and academic societies, as well as learning in advanced technology special lectures, students can work together with local communities and understand the importance of seeing things from a global perspective". Relationship with JABEE programs : The goals of learning and education in which this subject is actively involved are "(A) deepening understanding of knowledge about technology and acquisition of information technology and their application" and "(F) multifaceted from a global perspective. It is possible to think about things and develop comprehensive capabilities in collaboration with the local community. "However, it is also involved in (C) and (E). Course outline : Practical training for about 4 weeks or 140 hours at an off-campus training such as a company.
Style	Course method : Practicing while engaging in actual work at companies. A review board will be held after the training on campus. Grade evaluation method : Evaluation sheets from companies (60%), reports (20%) and presentations (20%) are used for evaluation. No retaking exam will be given.
Notice	Precautions on the enrollment : Be sure to take out insurance when you go to practice. Course advice : Be sure to attend the off-campus training and long-term internship briefing session as it will be held in advance. As a preliminary study, investigate the company to which you are practicing and its industry / business content. Be sure to follow the discipline of the company. intern's evaluation leads to school evaluation and affects recruitment and job hunting. Foundational subjects : All the subjects you have learned. Related subjects : Thesis Work Ⅰ, Ⅱ (Advanced Course 1st, 2nd) Attendance advice : Unless it is unavoidable, do not be late or absent from the training.

Characteristics of Class / Division in Learning

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Elective subjects

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance (beginning of the school year)	You can plan your long-term internship course and your career.
		2nd	Decision of training company	You can plan your long-term internship course and your career.
		3rd	Confirmation of practical training contents with the supervisor / company staff	You can understand the contents at the internship destination and make a training plan.
		4th	Practical training in companies, etc.	Understand your own role and practice, and through the practice you can understand the responsibility and creativity that a company has on society.
		5th	Practical training in companies, etc.	Understand your own role and practice, and through the practice you can understand the responsibility and creativity that a company has on society.
		6th	Practical training in companies, etc.	Understand your own role and practice, and through the practice you can understand the responsibility and creativity that a company has on society.
		7th	Practical training in companies, etc.	Understand your own role and practice, and through the practice you can understand the responsibility and creativity that a company has on society.
		8th	Preparation for Internship debriefing session	From a professional point of view, the training content can be summarized in a report and a presentation manuscript.

	2nd Quarter	9th	Internship debriefing session	You can present the training content in an easy-to-understand manner from a professional perspective.
		10th	Participate in practical training at companies for about 4 weeks or 140 hours.	
		11th		
		12th		
		13th		
		14th		
		15th		
		16th		
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 (%)

	Company Evaluation	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Report	Total
Subtotal	60	20	0	0	0	20	100
Basic Proficiency	0	0	0	0	0	0	0
Specialized Proficiency	40	10	0	0	0	15	65
Cross Area Proficiency	20	10	0	0	0	5	35

Tsuyama College	Year	2023	Course Title	Practice on International Communication

Course Information

Course Code	0041	Course Category	Specialized / Elective
Class Format	Seminar	Credits	Academic Credit: 1
Department	Advanced Electronics and Information System Engineering Course	Student Grade	Adv. 2nd
Term	Intensive	Classes per Week	
Textbook and/or Teaching Materials	Information on various events, training textbooks, etc.		
Instructor	SAEKI Fumihiro,TERAMOTO Takayuki,KONISHI Daijiro		

Course Objectives

Learning purposes :
Improve communication skills in English and deepen understanding of various cultures and customs on the earth. Foster awareness as an engineer who can play an active role internationally.

Course Objectives :
1. Understand the other person's thoughts in English, and be able to explain and convey your thoughts and specialized knowledge / skills in an easy-to-understand manner.
2. You can acquire an international sense and summarize the results.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	After understanding the other person thoughts in English regardless of the person to be communicated, such as a technician or the general public, you can convey your own opinions and ideas in an easy-to-understand manner while devising an explanation method, and gain a sufficient understanding.	After understanding the other person in English, you can convey your own opinions and ideas and gain understanding while devising an explanation method.	It can be said in an easy-to-understand manner using effective procedures and means in English.	It can not be said in an easy-to-understand manner using effective procedures and means in English.
Achievement 2	Understand differences in culture and values, develop multifaceted perspectives and ways of thinking, and combine "newly acquired information" and "past knowledge" to come up with new ideas.	Understand the differences in culture and values, and consider while associating "newly acquired information" with "past knowledge."	You can associate "newly acquired information" with "past knowledge".	You can not associate "newly acquired information" with "past knowledge".

Assigned Department Objectives

Teaching Method

Outline	General or Specialized : Specialized Field of learning : International communications and cultural differences Foundational academic disciplines : Foreign language / engineering Relationship with Educational Objectives : This subject corresponds to the major learning goal "(1) Students deepen their knowledge of natural science subjects centering on mathematics and physics, broaden their knowledge of the humanities and social sciences, and apply them as basic academic skills in mechanical and control system engineering and electronic and information system engineering." Relationship with JABEE programs : The goal of learning / education in which this subject is involved is "(F) It is possible to think about things from a global perspective and develop comprehensive abilities in collaboration with the local community." Course outline : Participate in international exchange programs related to our school or others, expand your international perspective based on the knowledge and skills you have learned so far, and aim to improve your communication skills in English.
Style	Course method : We will actively participate in international exchange programs related to our school or others and strive for self-improvement, and submit the designated report after participation. Presentations at international conferences, etc. made as part of special research are not included in this exercise. Grade evaluation method : Evaluate by the 100-point method according to the event report. Credits will be accredited through the Advanced Course Steering Committee at the end of the school year. It is necessary to submit a credit application. No retaking exam will be given.

Notice	Precautions on the enrollment : This subject is a "subject that requires study outside of class hours". Classes are offered for 15 credit hours per credit, but 30 credit hours are required in addition to this. Follow the instructions of your instructor for these studies. Course advice : It is important to broaden your interest in different cultures and English, and to actively participate in and make efforts in international exchange programs related to our school and others. This is a course that can be taken for two years. Participate in meetings such as guidance as preparatory learning to be conducted in advance, and check training / training destination information and safety information (required). In addition, read reference books and have relevant knowledge about different cultures. Foundational subjects : All the subjects you have learned so far, especially English Related subjects : Practical English Ⅰ, Ⅱ (Advanced Course 1st, 2nd), Reading on Technical English (Advanced Course 1st), Thesis Work Ⅰ, Ⅱ (Advanced Course 1st, 2nd) Attendance advice : Since the class is mainly related to society, be aware that you are a student of our school when you participate. Be careful about your safety. Check with the instructor for international exchange events related to this subject.

Characteristics of Class / Division in Learning

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

Elective subjects

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Participation in the event must be at least 30 hours.	Recognize the need for respect for the culture and history of each country and the tolerance to accept the differences.
		2nd	Includes participation in international exchange programs related to our school (actively if there is an opportunity to make a presentation)	Explain basic matters such as lifestyles, religious beliefs, and values of various countries.
		3rd	Participate in the event for a total of 30 hours or more (multiple events are acceptable) and submit a fixed report (travel time is not included in the exercise time). If you report the participation of the project, you can use the presentation materials to replace the outline of the exercises in the report.	Interpretation of cross-cultural events in relation to our own culture.
		4th		Explain the role that science and technology should play in the economic and social development of each country and region and the responsible behavior of engineers.
		5th		
		6th		
		7th		
		8th		
	2nd Quarter	9th		
		10th		
		11th		
		12th		
		13th		
		14th		
		15th		
		16th		
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 (%)

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