Tsuyama College	Year	2021	Course Title	Thesis Work Ⅱ

Course Information

Course Code	0025	Course Category	Specialized / Compulsory
Class Format	Experiment	Credits	School Credit: 8
Department	Advanced Mechanical and Control System Engineering Course	Student Grade	Adv. 2nd
Term	Year-round	Classes per Week	8
Textbook and/or Teaching Materials			
Instructor	KONISHI Daijiro,INOUE Hiroyuki,HOSOTANI Kazunori,CHO Feifei,NONAKA Shogo,OKE Shinichiro		

Course Objectives

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1. Using ICT and ICT tools to collect and analyze information in the technical field of specialization to obtain an overview of trends in advanced technology, and to understand the objective of research.
2. Form a research plan independently, conduct the experiments and analysis in details and evaluate the validity of the results.
3. Exchange opinions and ideas with many engineers through research presentations at academic conferences and practical training outside the school.
4. Contribute to the local community and the world by recognizing the responsibility that engineers bear to society and by developing the ability to evaluate corporate activities from multiple perspectives.

Rubric

	Excellent	Good	Acceptable	Unacceptable Level
Achievement 1	Confirm relationship between technology and research trends by collecting, arranging, and analyzing essential information, and understand the purpose of research in relation to these trends.	Evaluate literature and materials collected through own survey and utilize the information.Think about whether the information is correct or not, and to be able to utilize it based on the literature and materials obtained through one's own investigation.	Can explain the details of documents and materials that I studied.	Cannot explain the details of documents and materials studied.
Achievement 2	Can make plans for special research projects to solve engineering problems and analyze and explain logically.	Can make a research plan based on research objectives, and logically explain the methods and results of testing and evaluating assumptions and surveys.	Can make a research plan based on research objectives and explain the methods and results of testing and evaluating assumptions and surveys.	Cannot make a research plan based on research objectives and explain the methods and results of testing and evaluating assumptions and surveys.
Achievement 3	Can explain opinion clearly within a time limit using basic forms of effective presentation.	Can give a presentation using basic presentation forms.	Understand basic presentation forms.	Cannot give a basic presentation.
Achievement 4	Understand the responsibility that engineers have to society based on the impact of technology on society and nature. Make own career design and evaluate the potential fit with the company from multiple criteria.	Understand the responsibility that engineers have to society based on the impact of technology on society and nature and keep continuously improvement to become an engineer.	Can describe the responsibilities that engineers bear to society.	Cannot explain the responsibilities that engineers bear to society.

Assigned Department Objectives

Teaching Method

Outline	*General or specialized: Specialized *Field of study: Experiments and practical training *Foundational academic disciplines: Engineering / Mechanical Engineering / Control Engineering *Relationship with Educational Objectives : This subject is equivalent to “(4) By actively carrying out specialty research the student has developed the indispensable ability to solve problems and find solutions, and can creatively design and undertake research, communicate and cooperate effectively with other researchers, and present findings at academic conferences.” *Relationship with JABEE programs : The main goals of learning / education in this class are "(E), E-1", also "A-3”, “C-1", “D-1”, “D-3”, “E-2”, “E-3”, “F-1”, “G-2” and "H-2" are involved. In this course, students will be involved in the development of the following abilities; “Conceptual ability in design skills”, “Ability to identify problems”, “Ability to recognize problems from the perspective of public health and safety, culture, economy, environment, and ethics”, “Ability to find a solution under the constraints arising from these problems”, “Ability to express the concept in diagrams, sentences, formulas, programs, etc.”, “Ability to plan and implement continuously”. In addition, students are required to attend a lecture on engineering ethics. *Course outline: This course is designed for students who have received credit for Thesis Work I. It is a comprehensive course that summarizes the studies of the first and second years of the major through research activities. The results are submitted as a graduation thesis.Students are supervised in a close supervision. Joint research with companies is also actively encouraged.

Style	There are a total of 12 credit hours per week over three days. Students are required to conduct experimental or analytical research independently under the supervision of a faculty advisor for each research theme. Students will be instructed and advised on how to conduct engineering research, how to write scientific and technical papers, and how to make presentations and discussions. *Grading Method In this course, students will be evaluated by several instructors, including report reviewers and presentation reviewers, based on the condition that they have fulfilled the requirements indicated in the class plan. The evaluation will be based on the presentation at the research conference (50%) and the research report (50%), and the degree of achievement will be evaluated by the presentation and the report for each of the items (A) and (C) to (H) of the educational program. The student will pass the examination with a total evaluation score of 60% or higher. If the evaluation score does not reach the passing score, the student will be given guidance and may be re-evaluated.
Notice	*Note: This course is a "subject that requires study outside of class hours. A total of 45 hours of study is required per credit, including both the relevant class hours and study outside class hours. Students are required to follow the instructions of their instructors regarding study outside of class hours. *Advice for students: An extremely large amount of time is allotted for this course. Students are expected to conduct research activities independently in order to maximize the results in the given environment. As preparatory studies, students are expected to make full use of the knowledge they have learned so far to plan their research projects, find out the status of their research in the field, survey relevant references, acquire experimental and analytical techniques, summarize and discuss the results, prepare papers and reports, and prepare presentations. *Basic subjects: All subjects that have been studied so far Students are required to do preparatory studies and experiments as instructed by the instructor. *Advice on taking this course: This is the most important and 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 "Course Plan for the Integrated Studies" and "Summary of the Results of the Integrated Studies" 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. Also, 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

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance	Recognize one's current situation at any time and consider the studies and activities that are currently necessary in order to move toward a desired future state.
		2nd	Research theme and research plan	Collect necessary information appropriately from books, the Internet, and questionnaires.
		3rd	Progress Presentation	Correctly transmit (present) information using tools and methods appropriate to the purpose and target audience.
		4th	Research theme and research plan	Know that it is necessary to consider the reliability and accuracy of collected and cited sources of information.
		5th	Research theme and research plan	Know that they are responsible for the content and scope of influence of the information they disseminate.
		6th	Research theme and research plan	Know that you must take personal information and copyright into consideration when disseminating information.
		7th	Research theme and research plan	Collect information in order to recognize the difference between the ideal state and the current state (issues).
		8th	Research theme and research plan	Read and understand texts in Japanese and certain foreign languages.
	2nd Quarter	9th	Research theme and research plan	Understand what others say in Japanese and in specific foreign languages.
		10th	Trial and verification of experiments and analysis	Understand the purpose of a conversation and carry it out in Japanese or a specific foreign language.
		11th	Trial and verification of experiments and analysis	Draw charts and graphs for smooth communication.
		12th	Trial and verification of experiments and analysis	Adopt attitudes (affirmation, repetition, body language, etc.) for smooth communication.
		13th	Trial and verification of experiments and analysis	Able to listen to others' opinions and build consensus.
		14th	Trial and verification of experiments and analysis	Learn consensus-building conversations.
		15th	Trial and verification of experiments and analysis	Practice specific methods for consensus building, such as group work and workshops.
		16th	Trial and verification of experiments and analysis	Understand and be able to practice the purpose and preparation for experiments and practical training.

2nd Semester	3rd Quarter	1st	Trial and verification of experiments and analysis	Understand and be able to practice what should be done to prevent disasters and ensure safety.
		2nd	Trial and verification of experiments and analysis	Use diagrams and tables such as characteristic factor diagrams, tree diagrams, and logic trees, which are effective in finding problems and analyzing the current situation.
		3rd	Trial and verification of experiments and analysis	Understand that problem solving requires consideration of logical procedures, not intuition or common sense.
		4th	Trial and verification of experiments and analysis	Think logically and rationally to solve problems through group work and workshops, using all kinds of techniques such as brainstorming.
		5th	Trial and verification of experiments and analysis	Identify engineering problems in a logical and rational manner.
		6th	Trial and verification of experiments and analysis	Explain to others the thought process that led to the conclusion.
		7th	Trial and verification of experiments and analysis	Propose solutions of appropriate scope and level.
		8th	Trial and verification of experiments and analysis	Express the logic of the process of reaching conclusions using words, sentences, charts, etc.
	4th Quarter	9th	Trial and verification of experiments and analysis	Act in compliance with laws and rules.
		10th	Trial and verification of experiments and analysis	Act with consideration for the circumstances of others.
		11th	Trial and verification of experiments and analysis	Recognize the impact and effects of technology on society and nature and be able to enhance the responsibility that engineers should bear to society.
		12th	Trial and verification of experiments and analysis	Organize and compose multiple pieces of information.
		13th	Writing paper	Write correctly in Japanese or a specific foreign language to communicate with others.
		14th	Writing paper	Develop logic and thinking based on facts.
		15th	Presentation	Correctly transmit (present) information using tools and methods appropriate to the purpose and target audience.
		16th	Writing paper	Understand how to write reports and be able to put them into practice.

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Self evaluation	Research task	Other	Total
Subtotal	0	50	0	0	50	0	100
Basic Proficiency	0	0	0	0	0	0	0
Specialized Proficiency	0	40	0	0	50	0	90
Cross Area Proficiency	0	10	0	0	0	0	10