Toyama College	Year	2022	Course Title	Special Research of ECO Design Engineering I

Course Information

Course Code	0007	Course Category	Specialized / Compulsory
Class Format	Experiment / Practical training	Credits	Academic Credit: 2
Department	ECOdesign Engineering Course	Student Grade	Adv. 1st
Term	First Semester	Classes per Week	2
Textbook and/or Teaching Materials			
Instructor	Takamatsu Saori,Momose Noboru,Tajiri Tomoki,Tada Kazuhiro		

Course Objectives

Through research activities, students will learn high technical subjects on Mechanical Engineering, Electrical and Electric Engineering, Applied Chemistry, Material Engineering etc. Students will be trained to study independently and continuously, to show their originality based on the basic and specialized knowledge which they have learned.

Rubric

	Ideal Level of Achievement (Very Good)	High Level of Achievement (Good)	Standard Level of Achievement (Standard)	A little effiort is necessary to reach Atandard Level	Unacceptable Level of Achievement (Fail)
Understands that fabrication, alteration and fraudulent use of data are acts of dishonesty and has responsibility on the data and results to be treated in the Special Research. (ethical and social ability)	Clearly understands what kind of activities are acts of dishonesty and has responsibility on their own data by himself/herself.	Clearly understands what kind of activities are acts of dishonesty and has responsibility on their own data with adequate advices.	Understands acts of dishonesty are against morality and can have responsibility on their own data under instruction.	Understanding on acts of dishonesty are naive and, if instructed, the recognition can be improved. However, unconsciously deals with data which are suspicious as acts of dishonesty	Carelessly treat the data and consciously acts dishonestly.
Understands background and purpose of their own Special Research and possible to explain them to the others. (Critical and reasonable thinking, social ability)	Clearly understands research background and purpose and can explain them to the others including the recent research trends in those fields.	Understand research background and purpose and can explain them to the others.	Roughly understand research background and purpose and can explain them to the others	Understandings of research background and purpose are partly insufficient but can explain roughly to the others.	Understandings of research background and purpose are completely insufficient and cannot explain to the others.
Understands meaning of his/her research subject in the related fields. (Critical and reasonable thinking, cognitive ability)	Precisely survey research trends in the research areas related to his/her Special Research and understands the meaning and future plan of research.	Roughly understands the meaning of research subject in related areas including its future plan.	Roughly understands the meaning of research subject in related areas.	Possible to survey the related researches, but difficult to understand the meaning of his/her research subject.	Impossible to understand the meaning of his/her subjects in the related areas.
Has enough fundamental academic ability on natural sciences as Mathematics, Physics, Chemistry and related technical areas. Possible to carry out his/her Special Research. (Fundamental education, knowledge, experience and general skill.)	Sufficiently learned and possible to use them as technical tool.	Sufficiently learned, but necessary to deepen understanding to use them efficiently.	Mostly learned and can use them, but unable to use them enough.	Understanding is partly insufficient. Unable to use even the learned part enough.	Understanding is completely insufficient and impossible to use them.
Has sufficient self-motivation and positiveness on his/her own Special Research. (independent ability of thinking)	Possible to carry out research subject quite voluntarily and positively even without any assistance by supervisor.	Possible to carry out research subject voluntarily and positively with alittle assistance by supervisor.	Possible to carry out research subject mostly voluntarily and positively partly supported by supervisor.	Possible to carry out research subject with instruction by supervisor.	Impossible to carry out research even with instruction by supervisor.
Can set appropriate goal regarding his/her Special Research and keep enough time systematically. (Originality, Planning ability, Independent way of thinking)	Needs very little advice from supervisor, can set his/her own goal and keep time systematically.	Triggered by supervisor, can set his/her own goal and keep time systematically.	With a little advice from supervisor, can set his/her own goal and keep time systematically.	With continuous advice from supervisor, can set his/her own goal and mostly keep time systematically.	Even with advice from supervisor, cannot set his/her own goal and keep time systematically.

Possible to solve the problems encountered in the process of carrying out Special Research with creativity. (Systematic study experience, creative cognitive faculty and research and development capability)	Needs very little advice from supervisor, can solve the problems by himself/herself with creativity.	Triggered by supervisor, can solve the problems with creativity.	With a little advice from supervisor, an solve the problems with creativity.	Even with advice from supervisor, as the creativity is not enough, cannot reach the solution.	Even with advice from supervisor, due to the lack of creativity, cannot solve the problem.

Assigned Department Objectives

学習・教育到達度目標 A-3 学習・教育到達度目標 B-1 学習・教育到達度目標 B-3
JABEE 1(2)(c) JABEE 1(2)(d)(1) JABEE 1(2)(d)(2) JABEE 1(2)(d)(3) JABEE 1(2)(f) JABEE 1(2)(g) JABEE 1(2)(h)

Teaching Method

Outline	【学習・教育到達目標】： A-3, A-4, B-1, B-3, 【JABEE基準】： 基準1(2)(d)(2), 基準1(2)(f), 基準1(2)(g), 基準1(2)(d)(1)
Style	The students will carry out research activities at each laboratory with the advice from main and sub supervisors.
Notice	Special Research should be carried out on the basis of the knowledge and skills learned in the precviously studied classes. The students are expected to carry out the research independently and positively. They have to communicate with the supervisor on his/her research subject and intellectual property right etc.

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	Research	Carry out research activities at each laboratory with the advice from main and sub supervisors.
		2nd		
		3rd		
		4th		
		5th		
		6th		
		7th		
		8th		
	2nd Quarter	9th		
		10th		
		11th		
		12th		
		13th		
		14th		
		15th		
		16th		

Evaluation Method and Weight (%)

	Evaluatiation by supervisor	Total
Subtotal	100	100
Approach to research, understanding of background and purpose, basic knowledge	50	50
Attitude to research, indenepdency, planning ability, prpble,-solving ability, creativity, analyzing ability, application	50	50