Tsuyama College	Year	2024	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