木更津工業高等専門学校	開講年度	令和04年度 (2022年度)	授業科目	日本事情Ⅲ

科目基礎情報

科目番号	0076	科目区分	一般 / 必修（留学生）
授業形態	講義	単位の種別と単位数	履修単位: 1
開設学科	情報工学科	対象学年	3
開設期	前期	週時間数	2
教科書/教材			
担当教員	SAPKOTA ACHYUT		

到達目標

Its a bridge course for the foreign students (enrolled in the third year) so that they can be familiar with the contents learned by the first and second year students of KOSEN. This course is related to hardware part of the information engineering course.

ルーブリック

	Ideal Level	Standard Level	Unacceptable Level
Logic Circuits	Sufficiently understand various logic circuits and their applications.	Understand various logic circuits and their applications.	Do not understand various logic circuits and their applications.
Electric Circuits	Sufficiently understand various electric circuits and can perform related calculations.	Understand various electric circuits and can perform related calculations.	Do not understand various electric circuits and thus cannot perform related calculations.

学科の到達目標項目との関係

教育方法等

概要	Understand the basic hardware principles and applications of information engineering. Mainly basic logic circuits, electric circuits and their applications will be covered.
授業の進め方・方法	Classes will be focused on lecture as well as practical exercises format. The handout will be provided.
注意点	The content of this course overlaps with the content of "Logic Circuits I & II" and "Electric Circuits I & II" studied by second year students.

授業の属性・履修上の区分

□ アクティブラーニング	□ ICT 利用	□ 遠隔授業対応	□ 実務経験のある教員による授業

授業計画

		週	授業内容	週ごとの到達目標
前期	1stQ	1週	Digital signals and binary arithmetic operations	Understand the conversion from analog to digital signals and conversion between various number systems.
		2週	Boolean algebra (1)	Understand the basic operations of Boolean algebra and simplify the logic expressions.
		3週	Boolean algebra (2)	Understand the basic operations of Boolean algebra, simplify the logical expressions, and also able to apply Karnaugh maps.
		4週	Basic logic and logic symbols	Understand the basic logics and can express with logic symbols.
		5週	Combination of logic equations	Understand the combination of logical equations.
		6週	Logic circuit conversion	Able to convert a logic circuit composed of AND/OR/NOT into a NAND-only circuit or a NOR-only circuit.
		7週	Decoder, encoder, multiplexer, demultiplexer, adders and comparators.	Understand the functions and configuration of encoder, decoder, multiplexer, demultiplexer, adders and comparators.
		8週	Flip flop and latch	Understand the principles of flip-flop and latch circuits, and their difference.
	2ndQ	9週	Basic Electric Circuits (1)	Understand Ohm's law, Kirchhoff's law, Direct current (DC) series and parallel circuits
		10週	Basic Electric Circuits (2)	Current and voltage calculation of complex circuits using Ohm's law and Kirchhoff's law.
		11週	AC Circuits (1)	Understand the basics of AC signals and components of the basic AC circuit.
		12週	AC Circuits (2)	Understand impedance and admittance. Able to calculate impedance and admittance.
		13週	Diode	Understand the principle of a diode along with a LED.
		14週	Operational Amplifiers	Understand the principle and application of Operational Amplifiers.
		15週	Summary	Able to explain an overview of the contents learned in this course. Know the contents for continuous self-learning afterwards.
		16週		

評価割合

	Assignments	合計
総合評価割合	100	100
Basic Proficiency	50	50

Specialized Proficiency	50	50