Toyama College	Year	2022		Course Title	Computer Structure Ⅱ

Course Information

Course Code	0066		Course Category	Specialized / Elective
Class Format	Lecture		Credits	School Credit: 1
Department	Department of Electronics and Computer Engineering		Student Grade	3rd
Term	Second Semester		Classes per Week	2
Textbook and/or Teaching Materials	堀桂太郎：「図解コンピュータアーキテクチャ入門」（森北出版）			
Instructor	Shinokawa Toshiyuki			

Course Objectives

At the completion of this course, students will be able to
1) Explain how numerical data is expressed in a computer.
2) Explain the mechanism of an arithmetic operation circuit.
3) Explain the mechanism of execution control of an instruction.

Rubric

	Ideal Level of Achievement	Standard Level of Achievement	Unacceptable Level of Achievement)
Overview.	Can explain the concept of computer architecture almost perfectly.	Can explain the concept of computer architecture correctly.	Can't explain the concept of computer architecture correctly.
Instruction.	Can explain the execution control of an instruction almost perfectly.	Can explain the execution control of an instruction correctly.	Can't explain the execution control of an instruction correctly.
Memory.	Can explain the memory architecture almost perfectly.	Can explain the memory architecture correctly.	Can't explain the memory architecture correctly.

Assigned Department Objectives

MCCコア科目
ディプロマポリシー 1

Teaching Method

Outline	Students learn about computer architecture with a focus on the following :. 1) Positioning of Computational principles for Neumann computers. 2) A method of configuring a processor of a computer and a memory thereof.
Style	Lectures led by teacher.
Notice	Can take makeup exam in need aid up to maximum of 60 points.

Characteristics of Class / Division in Learning

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

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Syllabus description. History of the computer.	Can explain the history of computers.
		2nd	Data Words Number representation : decimal digits.	Can explain how to represent a decimal digit.
		3rd	Number representation : binary digits.	Can explain how to represent a binary digit.
		4th	Arithmetic shift, code extension, and address calculation.	Can explain arithmetic shifts, code extensions, and address calculations.
		5th	Floating point number.	Can explain floating point numbers.
		6th	An instruction word configuration (1).	Can explain instructions and operands.
		7th	An instruction word configuration (2).	Can explain type of instruction and addressing format.
		8th	Semester mid-term exam.	Midterm examination.
	4th Quarter	9th	Arithmetic circuit configuration : summing circuits.	Can explain binary adder.
		10th	Arithmetic circuit configuration : multiplication circuit.	Can explain binary multiplier.
		11th	Arithmetic circuit configuration : pipelining.	Can explain the arithmetic pipeline process.
		12th	Execution control of instructions.	Can explain the execution control of an instruction.
		13th	Memory system configuration.	Can explain how to make memory systems faster.
		14th	Configuration of input / output system.	Can explain the control of the input / output device.
		15th	Semester final exam.	Terminal examination.
		16th	Return and explanation of the final exam.	Return of the final exam.

Evaluation Method and Weight (%)

	Midterm exam	Final exam	Submissions.	Behavior	Portfolio	Other	Total
Subtotal	25	50	25	0	0	0	100
Basic Ability	25	50	25	0	0	0	100

| Technical Ability | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Interdisciplinary Ability | 0 | 0 | 0 | 0 | 0 | 0 | 0 |