COURSE SPECIFICATION

FACULTY OF SCIENCE AND TECHNOLOGY DIVISION OF PHYSICAL SCIENCE

SEMESTER 1st ACADEMIC YEAR 2025

HUACHIEW CHALERMPRAKIET UNIVERSITY

PART 1: General Information

1. **Code- Course Title and Credits:** CS1363 Computer Programming Credit: 3 (2/2-1/2-0)
   Course Name at KMITL: 1416317 COMPUTER PROGRAMMING 3 Credits
   Teaching Hours per Semester: .....45 hours.....

2. **Program or Course Type:** .....B1. Fundamental Courses .....
3. **Level and Year of study:** .....1st year of B.Sc. Health Robotics (058) .....
4. **Prerequisite:** .....-.....
5. **Co-requisite:** .....-.....
6. **Name of Instructor:** ..... Asst. Prof. Dr. Poom Konghuayrob.....(KMITL).....
   Name of Co-instructors: .....-.....
7. **Course Venue**: .....Room ..... Time: Friday 13.00 – 17.00 p.m. .....
8. **Last modification date of the course**: .....27 June 2025.....
9. **Office Hours:** .....Room ..... hrs. .....

PART 2: Objectives & Learning Outcomes

1. Course Objectives:

1. Design and implement algorithms using sequential statements, conditionals, and iterations.

2. Apply appropriate data types and data structures to organize and manipulate data effectively in programs.

3. Apply software development life cycle practices, including requirement analysis, debugging, testing, and validation, to develop functional programs.

4. Demonstrate responsibility and punctuality in class participation and assignment submission.

2. Course Description:

This course introduces basic concepts of computer programming such as elementary programming, data types, expressions, simple algorithms, and problem-solving involving sequential statements, conditionals, and iterations; students learn routines or methods as fundamental concepts and practice using strings, arrays, lists, maps or dictionaries, pre-defined libraries and classes, abstraction mechanisms, and basic object-oriented programming concepts; students will practice related activities of the software development life cycles such as system requirement analysis, debugging, testing and validation.

3. Course-level Learning Outcomes (CLOs):

Upon completion of this course, learners should be able to:

CLO1 Break down problems into logical steps, construct algorithms using sequential statements, conditionals, and iterations, and translate them into working computer programs. (Design and implement algorithms).

CLO2 Demonstrate proficiency in using various data types (strings, arrays, lists, maps/dictionaries) to store, organize, and access data within their programs. (Manipulate data effectively).

CLO3 Apply software development life cycle practices, including requirement analysis, debugging, testing, and validation, to create and refine functional programs.

CLO4 Demonstrate responsibility and is punctual to class and assignments.

4. The Alignment between Program Learning Outcomes (PLOs) and Course-level Learning Outcomes (CLOs):

PLOs/CLOs	CLO 1	CLO 2	CLO 3	CLO 4
PLO 2: Design and conduct experiments, as well as to analyze and interpret data.	✓	✓	✓	
PLO 4: Work as a team in leadership and team member roles in a variety of contexts or situations.	✓		✓	✓

PART 3: The Development of Student Learning Outcomes

Course Learning Outcomes (CLOs)	Teaching Strategies	Assessment Strategies
CLO 1: Break down problems into logical steps, construct algorithms using sequential statements, conditionals, and iterations, and translate them into working computer programs. (Design and implement algorithms).	Practice every class period, designing problems for each individual to solve.	-Evaluation from jobs and mission in classroom every week -Test Exams
CLO 2: Demonstrate proficiency in using various data types (strings, arrays, lists, maps/dictionaries) to store, organize, and access data within their programs. (Manipulate data effectively).	Practice practical skills, demonstrating the ability to use various data types to store, organize, and access information within a program.	-Evaluation from jobs and mission in classroom every week -Test Exams
CLO 3: Apply software development life cycle practices, including requirement analysis, debugging, testing, and validation, to create and refine functional programs.	Apply practical skills, use software development life cycle practices, including requirements analysis, debugging, testing, and verification, to create and improve working programs.	-Evaluation from jobs and mission in classroom every week -Test Exams
CLO 4: Demonstrate responsibility and is punctual to class and assignments.	Show responsibility and be punctual to class and homework.	Do homework and work in the classroom.

PART 4: Teaching Plan and Evaluation

4.1 Teaching Plan

Week	Topics / Details	Course Learning Outcomes (CLOs)	Learning Activities and Materials	Hours (Lecture/ Practice)	Instructor
1 4/07/25	Introduction to C Programming	CLO1,2,4	- The instructor presents lectures with slides and provides practical training, assigning computer program	2-2-0	Asst. Prof. Dr. Poom Konghuayrob

Week	Topics / Details	Course Learning Outcomes (CLOs)	Learning Activities and Materials	Hours (Lecture/ Practice)	Instructor
			problems for individual problem solving. - Use Learning and Innovation Skills C1: Creativity and Innovation C2: Critical Thinking and Problem Solving C3: Communication C4: Collaboration		
2 11/07/25	Concept of Programming	CLO1,2,3,4	- The instructor presents lectures with slides and provides practical training, assigning computer program problems for individual problem solving. - Use Learning and Innovation Skills C1: Creativity and Innovation C2: Critical Thinking and Problem Solving C3: Communication C4: Collaboration	2-2-0	Asst. Prof. Dr. Poom Konghuayrob
3 18/07/25	C language, Basic Programming and Output command	CLO1,2,3,4	- The instructor presents lectures with slides and provides practical training, assigning computer program problems for individual problem solving. - Use Learning and Innovation Skills C1: Creativity and Innovation C2: Critical Thinking and Problem Solving	2-2-0	Asst. Prof. Dr. Poom Konghuayrob

Week	Topics / Details	Course Learning Outcomes (CLOs)	Learning Activities and Materials	Hours (Lecture/ Practice)	Instructor
			C3: Communication C4: Collaboration		
4 25/07/25	Variable and Data Type	CLO2,4	- The instructor presents lectures with slides and provides practical training, assigning computer program problems for individual problem solving. - Use Learning and Innovation Skills C1: Creativity and Innovation C2: Critical Thinking and Problem Solving C3: Communication C4: Collaboration	2-2-0	Asst. Prof. Dr. Poom Konghuayrob
5 1/08/25	Operator and Operations	CLO1,2,4	- The instructor presents lectures with slides and provides practical training, assigning computer program problems for individual problem solving. - Use Learning and Innovation Skills C1: Creativity and Innovation C2: Critical Thinking and Problem Solving C3: Communication C4: Collaboration	2-2-0	Asst. Prof. Dr. Poom Konghuayrob
6 8/08/25	Control Statement	CLO1,2,3,4	- The instructor presents lectures with slides and provides practical training, assigning computer program	2-2-0	Asst. Prof. Dr. Poom Konghuayrob

Week	Topics / Details	Course Learning Outcomes (CLOs)	Learning Activities and Materials	Hours (Lecture/ Practice)	Instructor
			problems for individual problem solving. - Use Learning and Innovation Skills C1: Creativity and Innovation C2: Critical Thinking and Problem Solving C3: Communication C4: Collaboration		
7 15/08/25	Array / Pointers	CLO2,4	- The instructor presents lectures with slides and provides practical training, assigning computer program problems for individual problem solving. - Use Learning and Innovation Skills C1: Creativity and Innovation C2: Critical Thinking and Problem Solving C3: Communication C4: Collaboration	2-2-0	Asst. Prof. Dr. Poom Konghuayrob
8 22/08/25	Functions	CLO2,4	- The instructor presents lectures with slides and provides practical training, assigning computer program problems for individual problem solving. - Use Learning and Innovation Skills C1: Creativity and Innovation C2: Critical Thinking and Problem Solving	2-2-0	Asst. Prof. Dr. Poom Konghuayrob

Week	Topics / Details	Course Learning Outcomes (CLOs)	Learning Activities and Materials	Hours (Lecture/ Practice)	Instructor
			C3: Communication C4: Collaboration		
25-31/08/25 **Midterm Exam**					
9 5/09/25	Programming applications on microcontroller for robot	CLO1,2,3,4	- The instructor presents lectures with slides and provides practical training, assigning computer program problems for individual problem solving. - Use Learning and Innovation Skills C1: Creativity and Innovation C2: Critical Thinking and Problem Solving C3: Communication C4: Collaboration	2-2-0	Asst. Prof. Dr. Poom Konghuayrob
10 12/09/25	Programming applications on microcontroller for robot	CLO1,2,3,4	- The instructor presents lectures with slides and provides practical training, assigning computer program problems for individual problem solving. - Use Learning and Innovation Skills C1: Creativity and Innovation C2: Critical Thinking and Problem Solving C3: Communication C4: Collaboration	2-2-0	Asst. Prof. Dr. Poom Konghuayrob

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11 19/09/25	Programming applications on microcontroller for robot	CLO1,2,3,4	- The instructor presents lectures with slides and provides practical training, assigning computer program problems for individual problem solving. - Use Learning and Innovation Skills C1: Creativity and Innovation C2: Critical Thinking and Problem Solving C3: Communication C4: Collaboration	2-2-0	Asst. Prof. Dr. Poom Konghuayrob
12 26/09/25	Programming applications on microcontroller for robot	CLO1,2,3,4	- The instructor presents lectures with slides and provides practical training, assigning computer program problems for individual problem solving. - Use Learning and Innovation Skills C1: Creativity and Innovation C2: Critical Thinking and Problem Solving C3: Communication C4: Collaboration	2-2-0	Asst. Prof. Dr. Poom Konghuayrob
13 3/10/25	Programming applications on microcontroller for robot	CLO1,2,3,4	- The instructor presents lectures with slides and provides practical training, assigning computer program problems for individual problem solving.	2-2-0	Asst. Prof. Dr. Poom Konghuayrob

Week	Topics / Details	Course Learning Outcomes (CLOs)	Learning Activities and Materials	Hours (Lecture/ Practice)	Instructor
			- Use Learning and Innovation Skills C1: Creativity and Innovation C2: Critical Thinking and Problem Solving C3: Communication C4: Collaboration		
14 10/10/25	Programming applications on microcontroller for robot	CLO1,2,3,4	- The instructor presents lectures with slides and provides practical training, assigning computer program problems for individual problem solving. - Use Learning and Innovation Skills C1: Creativity and Innovation C2: Critical Thinking and Problem Solving C3: Communication C4: Collaboration	2-2-0	Asst. Prof. Dr. Poom Konghuayrob
15 17/10/25	Programming applications on microcontroller for robot	CLO1,2,3,4	- The instructor presents lectures with slides and provides practical training, assigning computer program problems for individual problem solving. - Use Learning and Innovation Skills C1: Creativity and Innovation C2: Critical Thinking and Problem Solving C3: Communication C4: Collaboration	2-2-0	Asst. Prof. Dr. Poom Konghuayrob

Week	Topics / Details	Course Learning Outcomes (CLOs)	Learning Activities and Materials	Hours (Lecture/ Practice)	Instructor
20/10/25 – 3/11/25 Final Exam					

4.2. Learning Outcomes Evaluation Plan

Course Learning Outcomes (CLOs)	Evaluation Methods (Report, Project, Quiz, Midterm, and Final examinations)	Evaluation Date & Time	Percentage
CLO4	Homework, the perfect attendance (7 times random), and Quiz	All Weeks	10%
CLO1,2,4	Computer programming Lab	All Weeks	30%
CLO1,2,3,4	Challenging Problems (Final Project)	Week 9	20%
CLO1,2	Midterm examination	25-31/08/25	20%
CLO1,2,3,4	Final examination / Programming Application	20/10/25 – 3/11/25	20%
			100%

PART 5: Learning Resources

1. References

Power Point Presentation 1416317 COMPUTER PROGRAMMING

2. Recommended supplementary, multimedia, and learning materials

Fundamental Books of Computer Programming

PART 6: Course Evaluation and Improvement

1. Students' Course Effectiveness Evaluation

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2. Teaching Evaluation Methods

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3. Teaching Improvement Methods

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4. Review of Learning Achievement and Outcomes

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5. Course Effectiveness Revision Plan and Process

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Course Instructor

Signature Poom Konghuayrob **Date of report**: .....01/07/25.....

Chairperson of the program

Signature Prayoonsak Pluengphon... **Date of report**: .....01/07/25.....