MINDANAO STATE UNIVERSITY
ILIGAN INSTITUTE OF TECHNOLOGY

COLLEGE OF COMPUTER STUDIES

DEPARTMENT OF COMPUTER SCIENCE

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RTL COURSE SYLLABUS in CCC101 (Computer Programming 1)

Course No./Title: CCC 101 – Computer Programming I

Course Credit: 3 Units

Duration: 14 weeks

Delivery Mode: Asynchronous (remotely supervised) with a few synchronous sessions

Level: Basic

Course Description:

The course covers the use of general-purpose programming language to solve problems. The emphasis is to train students to design, implement, test, and debug programs intended to solve computing problems using fundamental programming constructs.

Learning Culminating Outcome: By the end of the course, the student is able to create and debug a computer program using basic programming control structures for solving basic real world computing problems.

Prerequisite: None

Co-requisite: None_____

Evaluation Criteria: The course requires 60% of the total score to pass.

Course Developers/Instructors: Julieto E. Perez
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Consultation hours: MH: 9:30-12:00pm

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Outcomes for HIGHER EDUCATION INSTITUTION:	A. To keep abreast of latest developments in the specific field of practice; B. Effectively communicate using English and Filipino, orally and in writing; C. Work effectively and independently in multi-disciplinary and multi-cultural teams; D. Exemplify professional, social, ethical, and environmental responsibility; E. Preserve and promote "Filipino historical and cultural heritage" (based on RA 7722); and F. Advocate for peace in multi-cultural settings.
Outcomes common to the (field):	a. Analyze complex problems, and identify and define the computing requirements needed to design an appropriate solution. b. Apply computing and other knowledge domains to address real-world problems. c. Design and develop computing solutions using a system-level perspective. d. Utilize modern computing tools. e. Evaluate computing solutions in relation to their impact on society and environment
Outcomes specific to the (Program):	f. Ability to apply knowledge of computing, basic science, and mathematics appropriate to the discipline and the program educational objectives. g. Ability to analyze a problem, identify and define the computing requirements appropriate to the problem's solution. h. Ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the trade-offs involved in the design choices. i. Ability to use technique, skills, and tools necessary to current computing practice.
Outcomes specific to universities:	j. Generate new knowledge using research and development projects

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Course Goals	OUTCOMES																		
	Higher Education Institution						Program Outcome (Common in the Discipline)						Outcome Specific to Program						Universities
	A	B	C	D	E	F	a	b	c	d	e		f	g	h	i			j
LO1: Design, implement, test, and debug program based on a given specification that uses each of the following fundamental components: (1) primitive data types, (2) basic computation, (3) simple I/O, (4) conditional and iterative structures, (5) definition of functions and parameter passing, and (6) recursion	✔	✔					✔	✔		✔			✔	✔	✔	✔			
LO2: Analyze and explain the behavior of simple programs involving the fundamental programming contructs, variables, expressions, assignments, I/O, control constructs, functions, parameter passing, and recursion.	✔	✔					✔	✔		✔			✔	✔	✔	✔			

Course Schedule of Course Requirements

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Week	Topic	Intended Learning Outcome	Teaching and Learning Activities	Learning Resources	Assessment Strategies/Tools	Evidence of Outcome	Due Date
1	Introduction: Programming Basics	At the end of the unit, the student is able to write C program using basic input and output.	Lecture, Program Demo, Guided Programming	PowerPoint presentation Demo program	Quiz, Programming Exercise	A simple computer program with input and output statements.	
2	Functions - Definitions and Prototypes	At the end of the unit, the student is able to create Basic C program using functions and prototypes.	Lecture	PowerPoint presentation Demo program	Quiz	An application using the fundamental types as well as arithmetic operators applying preced- ence rules.	
3	Functions - Scope Rules	At the end of the unit, the student is able to create Basic C program using functions and prototypes.	Lecture, Program Demo, Guided Programming	PowerPoint presentation Demo program	Quiz, Programming Exercise	Application solving a given problem using simple decision making statements.	
4	Exam 1						

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Week	Topic	Intended Learning Outcome	Teaching and Learning Activities	Learning Resources	Assessment Strategies/Tools	Evidence of Outcome	Due Date
5	Decision Control Structures: if, if-else, switch	Understand different types of decision control structures and apply to certain problem.	Lecture, Program Demo, Guided Programming	PowerPoint presentation Demo program	Quiz, Programming Exercise	Application solving a given problem using repetition statements.	
6	Repetition Control Structures: while, do-while, for	Understand different types of repetition control structures and apply to certain problem.	Lecture, Program Demo, Guided Programming	PowerPoint presentation Demo program	Quiz, Programming Exercise	Application on the use of increment, decrement, and assignment operators.	
7	Arrays	create representation of certain problems involving lists and string input.	Lecture, Program Demo, Guided Programming	PowerPoint presentation Demo program	Quiz, Programming Exercise	Program using array data structure to represent a set of related data items.	
8	Arrays - Linear Search	Use arrays in solving searching problem.	Lecture, Program Demo, Guided Programming	PowerPoint presentation Demo program	Quiz, Programming Exercise	Demonstration on how to pass arrays to functions.	

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Week	Topic	Intended Learning Outcome	Teaching and Learning Activities	Learning Resources	Assessment Strategies/Tools	Evidence of Outcome	Due Date
9	Arrays – Sorting	Use arrays in solving sorting problem.	Lecture, Program Demo, Guided Programming		Quiz, Programming Exercise	Basic searching application.	
10	Exam 2						
11	Recursion	Apply recursion to certain mathematical problems.	Lecture, Program Demo, Guided Programming	PowerPoint presentation Demo program	Quiz, Programming Exercise	Basic sorting application.	
12	Pointers		Lecture, Program Demo, Guided Programming	PowerPoint presentation Demo program	Quiz, Programming Exercise	Use pointers to pass arguments to functions by reference.	
13	Strings		Lecture, Program Demo, Guided Programming	PowerPoint presentation Demo program	Quiz, Programming Exercise	Program that use each of the following data structures: arrays, records, and strings.	
14	File Processing		Lecture, Program Demo, Guided Programming	PowerPoint presentation Demo program	Quiz, Programming Exercise	Program that use each of the following data structures:	

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Week	Topic	Intended Learning Outcome	Teaching and Learning Activities	Learning Resources	Assessment Strategies/Tools	Evidence of Outcome	Due Date
						arrays, records, and strings.	
15	Structures		Lecture, Program Demo, Guided Programming	PowerPoint presentation Demo program	Quiz, Programming Exercise	Program that use each of the following data structures: arrays, records, and strings.	
16	Exam 3						

Reference:

Hanly, Jeri B. & Koffman, Elliot B.,(2005) Problem Solving and Program Design in C. 5th Ed. Temple University, Pearson Education, Inc., Boston, MA, USA

Scoring Rubrics
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This course involves computer programming activities as one of the sources of assessment. The rubrics is described below.

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Computer Programming
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1. Specifications
   a. (Exceptional) The program works and meets all of the specifications.
   b. (Acceptable) The program works and produces correct results and displays them correctly. It also meets most of the other specifications.
   c. (Amateur) The program produces correct results but does not display them correctly.
   d. (Unsatisfactory) The program is producing incorrect results.

2. Readability
   a. (Exceptional) The code is exceptionally well organized and very easy to follow.
   b. (Acceptable) The code is fairly easy to read.
   c. (Amateur) The code is readable only by someone who knows what it is supposed to be doing.
   d. (Unsatisfactory) The code is poorly organized and very difficult to read.

3. Reusability
   a. (Exceptional) The code could be reused as a whole or each routine could be used.
   b. (Acceptable) Most of the code could be reused in other programs.
   c. (Amateur) Some part of the code could be reused in other programs.
   d. (Unsatisfactory) The code is not organized for reusability.

4. Documentation
   a. (Exceptional) The documentation is well written and clearly explains what the code is accomplishing and how.
   b. (Acceptable) The documentation consists of embedded comment and some simple header documentation that is somewhat useful in understanding the code.
   c. (Amateur) The documentation is simply comments embedded in the code with some simple header comments separating routines.
   d. (Unsatisfactory) The documentation is simply comments embedded in the code and does not help the reader understand the code.

5. Delivery
   a. (Exceptional) The program was delivered on time.
   b. (Acceptable) The program was delivered within a week of the due date.

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c. (Amateur) The code was within 2 weeks of the due date.
d. (Unsatisfactory) The code was more than 2 weeks overdue.

6. Efficiency
   a. (Exceptional) The code is extremely efficient without sacrificing readability and understanding.
   b. (Acceptable) The code is fairly efficient without sacrificing readability and understanding.
   c. (Amateur) The code is brute force and unnecessarily long.
   d. (Unsatisfactory) The code is huge and appears to be patched together.

```
Criteria              Weight
--------------------- ---------
Specifications    20%
Readability       20%
Reusability       20%
Documentation        10%
Delivery          10%
Efficiency        20%
--------------------- ---------
```

Essay
----

1. Relevance of answer to the question
a. (Exceptional) Answer is complete; sufficient detail provided to support assertions; answer
focuses only on issues related to the question; actually correct
b. (Acceptable) Answer is brief with insufficient detail. Unrelated issues were introduced
and/or minor errors in content.
c. (Amateur) Answer is incomplete. Excessive discussion of unrelated issues and/or significant
errors in content.
d. (Unsatisfactory) The essay did not answer the question.

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2. Thoroughness of answer
a. (Exceptional) Deals fully with the entire question.
b. (Acceptable) Most of the basic details are included but some are missing.
c. (Amateur) Serious gaps in the basic details needed.
d. (Unsatisfactory) None of the relevant details were included.
3. Organization and logic of answer
a. (Acceptable) Clear and logical presentation; good development of an argument; Transitions
are made clearly and smoothly.
b. (Amateur) Minor problems of organization or logic; Needs work on creating transitions
between ideas.
c. (Unsatisfactory) Weak organization; sentences rambling; ideas are repeated.
4. Mechanics of writing (spelling, punctuation, grammar, clarity of prose)
a. (Acceptable) Clear, readable, prose. Good use of transitions; no problems with spelling,
punctuation,or grammar.
b. (Amateur) Frequent problems with mechanics of language; Occasional awkward sentences
and poor transitions; reduce readability.

c. (Unsatisfactory) Major problems with mechanics of language; Awkward sentence construc-
tion; Poor or absent transitions; Frequently difficult to understand.

This course is also assessed through the embedded measurements described in the following section.

Grading System
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Exams

There will be three exam, namely: prelim, midterm, and final, with respective total scores and schedules will be determined and agreed in the
class.

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Programming Activities

Laboratory activities will be assessed with the programming rubrics.

Grading Scheme

The rate will be determined based on the following scheme:

Measurement	Weight
Prelim Exam	20%
Midterm Exam	20%
Final Exam	25%
Quizzes	15%
Laboratory Activities	20%

The student should be able to get the **minimum rate of 60% to pass the course**. The rate is mapped to the actual grade based on the following scale:

Rate Scale	Grade
95.64 -- 100+	1.0
91.18 -- 95.63	1.25
86.73 -- 91.17	1.5
88.27 -- 86.72	1.75
77.82 -- 82.26	2.0
73.36 -- 77.81	2.25

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68.91 -- 73.35 2.5
64.45 -- 68.90 2.75
60.00 -- 64.44 3.0
below -- 59.99 5.0
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Prepared by:

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Faculty

Recommending Approval:

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