



Syllabus of Instruction in
CC - 101 (Computer Programming, Fundamentals)
1st Semester, A. Y. 2023-2024

NEUST VISION

NEUST is a locally responsive and internationally relevant and recognized University of Science and Technology.

PANANAW

Ang NEUST ay Pamantasan ng Agham at Teknolohiyang matugunin sa pambansang pangangailangang napapanahon, at kinikilala sa daigdig.

NEUST MISSION

To develop new knowledge and technologies and transform human resources into productive citizenry to bring about development impact to local and international communities.

LAYON

Makalinang ng mga bagong kaalaman at teknolohiya, at baguhing-anyo ang yamang katauhan upang maging mabungang mamamayan na magdadala ng kaunlaran at pagbabago sa pambansa at pandaigdigang pamayanan.

COLLEGE GOALS

Train and produce highly skilled professionals equipped with moral and up-to-date knowledge in Information Technology who are globally competitive contributors to the realization of University's vision and mission.

LAYON NG KOLEHIYO

Makapagsanay at makalikha ng mga bihasang propesyonal at nagtataglay ng napapanahong kaalaman at kakayahang global sa teknolohiyang pang impormasyon upang maging bahagi sa pagsasakatuparan ng misyon at pananaw ng pamantasan.



PROGRAM EDUCATIONAL OBJECTIVES (PEO)

1. Provide advanced knowledge and skills in the field of Information Technology with specialization in Database Systems Technology, Web Systems Technology, and Network Systems Technology.
2. Engage faculty and students in relevant IT researches and extension activities that will contribute to the technological development of the community.
3. Design programs and ventures that will cultivate the analytical and critical-thinking skills of the students.
4. Provide avenues where students can develop their communication skills and express their thoughts and ideas clearly.
5. Nurture students to become ethical individuals who promote the preservation of the cultural aspects of the community.
6. Produce IT professionals who are competent to take National/International Certification Examinations.

TUNGUHIN NG PROGRAMA

1. Makapagbigay ng kaalaman at kakayahan na may kadalubhasahan sa Database Systems Technology, Web Systems Technology, at Network Systems Technology.
2. Mahikayat ang mga guro at mag-aaral sa pagbuo ng mga saliksik upang maibahagi sa teknikal na pag-unlad ng komunidad.
3. Makapagdisenyo ng mga programa at gawain na lilitang sa analitikal at kritikal na pag-iisip.
4. Makapagbigay ng pagkakataong mapaunlad ang kakayahan sa komunikasyon ng mga mag-aaral para sa malinaw na pagpapahayag ng kaisipan.
5. Makapaghugog ng mga estudyante na nagtagtaglay ng etika sa pagpapanatili ng aspektong kultural ng komunidad.
6. Makapaghugog ng mga propesyonal na mayroong kakayahang pumasa sa mga nasyonal at internasyonal na pagsusulit.

COURSE SYLLABUS

I. PRELIMINARIES

- A. Curriculum Program : Bachelor of Science in Information Technology
B. Course Code : CC - 101
C. Course Title : Computer Programming 2, Fundamentals
D. Credit Unit/Course Credit : 3 units (2 hours lecture, 3 hours laboratory)
E. Time Duration : 18 weeks / semester * 5 hours / week (90 hours)
F. Pre-requisites : N/A

II. COURSE DESCRIPTION: This course introduces the importance of algorithms in problem-solving process; identify the necessary properties of good algorithm for solving simple problems, draw flowcharts based on given specifications and use fundamental programming concepts and basic control structures in developing simple C++ programs.

**III. COURSE OUTCOMES**

- CO 1** Learn the fundamental concepts, logic, and terminology of computer programming.
- CO 2** Learn the standards implemented when developing programs in C++.
- CO 3** Learn the basic elements of a C++ program.
- CO4** Learn and develop simple C++ programs using mathematical operators and decision control structures.

IV. STUDENT OUTCOMES AND RELATIONSHIP TO PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

Student Outcomes	Program Educational Objectives		
	1	2	3
1. Apply knowledge of computing and mathematics appropriate to the discipline;	✓		
2. Analyze a problem, identify, and define the computing requirements appropriate to the solution;	✓		
3. Design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs;	✓		
4. Function effectively in teams to accomplish a common goal;	✓	✓	✓
5. Understand professional, ethical, legal, security, and social issues and responsibilities;	✓	✓	✓
6. Communicate effectively with a range of audiences;	✓	✓	✓
7. Analyze the local and global impact of computing on individuals, organizations, and society;	✓	✓	✓
8. Recognize the need to engage in continuing professional development;	✓	✓	✓
9. Use current techniques, skills, and tools necessary for computing practice;	✓	✓	
10. Use and apply current technical concepts and practices in the core information technologies;	✓	✓	
11. Identify and analyze user needs and take them into account in the selection, creation, evaluation, and administration of computer-based systems;	✓		
12. Effectively integrate IT-based solutions into the user environment; and	✓		
13. Understand best practices and standards and their application.	✓		

**V. COURSE OUTCOMES AND RELATIONSHIP TO STUDENT OUTCOMES**

Course Outcomes	Student Outcomes												
	1	2	3	4	5	6	7	8	9	10	11	12	13
CO 1 Learn the fundamental concepts, logic, and terminology of computer programming;	I	R	I								R		
CO 2 Learn the standards implemented when developing programs in C++.	R	R	R	R					R	R	R	R	
CO 3 Learn the basic elements of a C++ program;	R	R	R										D
CO4 Learn and develop simple C++ programs using mathematical operators and decision control structures.	I	R	R	R	R			R	R	R	R	R	

I-introductory

R-reinforcing

D-demonstrating

VI. COURSE COVERAGE

Course Outcome	Learning Unit/Topic	Time Allotment	Intended Learning Outcomes	Teaching Learning Activities/Strategies	Assessment Tools
	<ol style="list-style-type: none">1. Course Orientation<ul style="list-style-type: none">● University's Vision and Mission● Institutional Graduate Attributes (IGA)● Program Goals and Program Educational Objectives● Course and Student Outcomes● Course Requirements● Evaluation Criteria2. Self-introduction of faculty and students		 Week 1		



CO1 CO2	I. PROGRAMMING CONCEPTS 1. Components of the Computer System 2. Types of Programmers 3. Problem Solving 4. Elements of Programming 5. Programming Paradigms	Week 2	At the end of the lesson the students should be able to: a. define software and hardware; b. identify the types of programmers; c. explain the steps of problem solving; d. identify the elements of programming; and e. classify the different programming paradigms.	<ul style="list-style-type: none">● Classroom discussions● Interactive deliberations of ideas and thoughts● Laboratory Sessions● Sessions using Messenger Group Chats, FB Groups/Page, and Schoology, Google Classroom or other Learning Management System apps● Downloadable freeware (C++ applications) for Laptops, PCs, and Smartphones● Module-based Learning Sessions	Seat works Quiz Recitations Board works Laboratory Exercises Presentation of Outputs
CO1	II. NUMBER SYSTEMS 1. Different Number Systems 2. Number System Conversions	Week 3-4	At the end of the lesson the students should be able to: a. identify the different number systems; and b. convert values into different number systems.	<ul style="list-style-type: none">● Classroom discussions● Interactive deliberations of ideas and thoughts● Laboratory Sessions● Sessions using Messenger Group Chats, FB Groups/Page, and Schoology, Google Classroom or other Learning Management System apps● Downloadable freeware (C++ applications) for Laptops, PCs, and Smartphones● Module-based Learning Sessions	Seat works Quiz Recitations Board works Laboratory Exercises Presentation of Outputs



CO1	III. PROGRAMMING LANGUAGES 1. History of Programming Languages 2. Types of High-Level Programming Languages 3. Control Structures 4. Flowchart	Week 5-6	At the end of the lesson the students should be able to: a. understand the history of programming languages; b. identify the types of high-level programming languages; c. understand the control structures; and d. create a flowchart.	<ul style="list-style-type: none">● Classroom discussions● Interactive deliberations of ideas and thoughts● Laboratory Sessions● Sessions using Messenger Group Chats, FB Groups/Page, and Schoology, Google Classroom or other Learning Management System apps● Downloadable freeware (C++ applications) for Laptops, PCs, and Smartphones● Module-based Learning Sessions	Seat works Quiz Recitations Board works Laboratory Exercises Presentation of Outputs
CO1 CO2 CO3	IV. C++ PROGRAMMING DEVELOPMENT CYCLE 1. Structure of a C++ program 2. C++ Application software 3. Compiling a C++ source code 4. Debugging 5. Executing C++ program	Week 7-8	At the end of the lesson the students should be able to: a. identify the parts of a simple C++ program; b. learn about different C++ applications; c. create and compile C++ programs; d. debug a C++ source code; and e. execute a program.	<ul style="list-style-type: none">● Classroom discussions● Interactive deliberations of ideas and thoughts● Laboratory Sessions● Sessions using Messenger Group Chats, FB Groups/Page, and Schoology, Google Classroom or other Learning Management System apps● Downloadable freeware (C++ applications) for Laptops, PCs, and Smartphones● Module-based Learning Sessions	Seat works Quiz Recitations Board works Laboratory Exercises Presentation of Outputs
Midterm Examination (Week 9)					



CO1 CO2 CO3	<p>V. IDENTIFIERS, VARIABLES AND CONSTANTS</p> <ol style="list-style-type: none">1. Identifiers2. Data Types3. Variables4. Constants5. Assignment Statements and Expressions6. Mathematical Operators	Week 10	<p>At the end of the lesson, the student should be able to:</p> <ol style="list-style-type: none">a. define and classify identifiers;b. use and apply appropriate data types for variables and constants;c. name, declare, and initialize variables and constants,d. use assignment statements and expressions; ande. apply mathematical operators in building C++ programs.	<ul style="list-style-type: none">● Classroom discussions● Interactive deliberations of ideas and thoughts● Laboratory Sessions● Sessions using Messenger Group Chats, FB Groups/Page, and Schoology, Google Classroom or other Learning Management System apps● Downloadable freeware (C++ applications) for Laptops, PCs, and Smartphones● Module-based Learning Sessions	Seat works Quiz Recitations Board works Laboratory Exercises Presentation of Outputs
CO1 CO2 CO3	<p>VI. INPUT/OUTPUT STATEMENTS</p> <ol style="list-style-type: none">1. Input Statement2. Output Statement	Week 11	<p>At the end of the lesson, the student should be able to:</p> <ol style="list-style-type: none">a. create a C++ program using input and output statements.	<ul style="list-style-type: none">● Classroom discussions● Interactive deliberations of ideas and thoughts● Laboratory Sessions● Sessions using Messenger Group Chats, FB Groups/Page, and Schoology, Google Classroom or other Learning Management System apps● Downloadable freeware (C++ applications) for Laptops, PCs, and Smartphones● Module-based Learning Sessions	Seat works Quiz Recitations Board works Laboratory Exercises Presentation of Outputs



CO1 CO2 CO3 CO4	VII. DECISION MAKING 1. Relational Operators 2. Boolean Operators 3. If statement 4. If else statement 5. Nested if else Statement 6. Switch Statement	Week 12-14	At the end of the lesson the students should be able to: a. use relational and logical operators to make decision in a program; b. write decision-making statements in C++, including an if statement and an if else statement; and c. write other decision-making statements in C++ including nested if else and switch statement	<ul style="list-style-type: none">● Classroom discussions● Interactive deliberations of ideas and thoughts● Laboratory Sessions● Sessions using Messenger Group Chats, FB Groups/Page, and Schoology, Google Classroom or other Learning Management System apps● Downloadable freeware (C++ applications) for Laptops, PCs, and Smartphones● Module-based Learning Sessions	Seat works Quiz Recitations Board works Laboratory Exercises Presentation of Outputs
CO1 CO2 CO3 CO4	Case Study	Week 15-17	At the end of the activity, the students should be able to: a. develop a C++ application that uses the different control structures and functions; b. develop a project documentation for their final case study; and c. present their final case study.	<ul style="list-style-type: none">● Project Documentation● Written Code / Sample Output● Project Presentation	Project Documentation Written Code / Sample Output Project Presentation
Final Examination/Submission of Outputs (Week 18)					



VII. COURSE REQUIREMENTS AND EVALUATION CRITERIA

The minimum requirement for a passing grade is 75% final grade average from the following:

Attendance	10%
Assignment/Seatwork/Recitation	15%
Quizzes	25%
Laboratory Exercise/Case Study	30%
Term Exam	20%
TOTAL	100%

GRADING SYSTEM: The University Grading System is specified in the matrix below.

Numerical Value	Percentage / Descriptive Equivalent	Numerical Value	Percentage / Descriptive Equivalent	Numerical Value	Percentage / Descriptive Equivalent
1.00	97-100%	2.00	85-87%	3.00	75%
1.25	94-96%	2.25	82-84%	5.00	74% & below, Failed
1.50	91-93%	2.50	79-81%	INC	Incomplete
1.75	88-90%	2.75	76-78%	OD/UD	Dropped without Credit

**VIII. REFERENCES**

- Ashraf, Zeeshan. (2020). *How to Program in C++ with 100 Examples (Volume-II)*. GlobeEdit. ISBN 978-613-9-41921-0
- Fawcett, Amanda. (2021). *Learn C++ from scratch: The complete guide for beginners*.
- Grimes, Richard. (2017). *Beginning C++ programming*.
- Halterman, Richard. (2018). *Fundamentals of C++ Programming*. School of Computing Southern Adventist University.
- Leona, Rodibelle F. *C++ Basics, Worktext in CC101*
- Smith, Jo Ann. (2014). *C++ Programs to Accompany Programming Logic and Design*. Cengage Learning
- Stack Overflow Community. (2019). *Learning C++*. RIP Tutorial.
- ICT CC101 – Computer Programming, Fundamentals Module

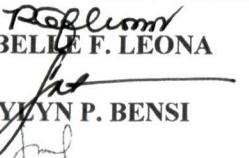
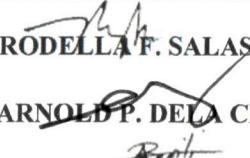
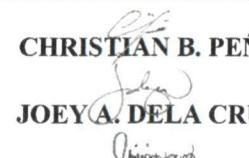
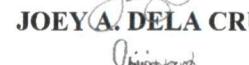
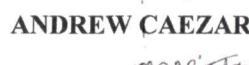
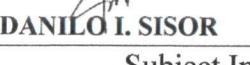
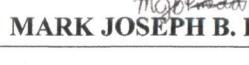
IX. ADDITIONAL READINGS

Tutorials Point – C++

[\(https://www.tutorialspoint.com/cplusplus/\)](https://www.tutorialspoint.com/cplusplus/)

Cplusplus.com

[\(http://wwwcplusplus.com/doc/tutorial/\)](http://wwwcplusplus.com/doc/tutorial/)https://www.researchgate.net/publication/337136941_How_to_Program_in_C_With_100_Examples_Volume-II

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