

DON BOSCO TECHNICAL COLLEGE
College Department
Computer Engineering Program

VISION

We are an ASEAN-recognized and learner-centered institute of technological and technical education.

MISSION

Following the Salesian charism, a.) we form an Educative-Pastoral Community of lifelong learners and agents of social change. Faithful to Catholic teachings, b.) we champion holistic personal growth and integral ecology. Mindful of our Filipino heritage, c.) we promote active participation and collaboration of all to uphold social justice and equity.

d.) We work for total human development, by providing an academically vigorous and innovative environment that forms the young to be qualified and competent workers, entrepreneurs and professionals who embody the ideals of justice with charity, prosperity with integrity, and technology with a soul.

PROGRAM EDUCATIONAL OBJECTIVES		MISSION			
		A	B	C	D
Within four years, prior to graduation, the graduates of Computer Engineering program shall have the capacity to:					
1	Serve and lead in meeting the scientific, technological, managerial and social needs of businesses and industries in the local and global economy through collaboration and innovation.		✓	✓	✓
2	Provide solutions to improve lives and livelihoods using science and technology of design, development, implementation, Provide maintenance and integration of software and hardware components in modern computing systems and computer-controlled equipment.		✓		✓
3	Engage in lifelong learning and professional development through self-study; research, continuing professional education or graduate studies in computer engineering or other related fields.	✓	✓		✓
4	Deepen spirituality and live out the Gospel values through active service, with integrity and prayer, within his/her community.	✓	✓	✓	✓

COURSE SYLLABUS

1. **Course Code** : BES241
2. **Course Title** : PROGRAMMING LOGIC AND DESIGN
3. **Pre-requisite** : NONE
4. **Co-requisite** : None
5. **Credit/ Class Schedule** : 2 units /6 laboratory hours per week

Course Title: Programming Logic and Design	Date Effective: 1st Semester SY 2019-2020	Date Revised: June 27, 2019	Prepared by: Engr. Rico M. Manalo	Approved by: Engr. Winston G. Dereje	Page 1 of 6
--	--	---------------------------------------	---	--	-------------

AUTHORIZED COPY

6. **Course Description** : This is an introductory course in computer programming logic. The student will learn algorithms applicable to all programming languages, including: identifiers, data types, arrays, control structures, modular programming, generating reports, and computer memory concepts. The student will learn to use charts commonly used in business and information processing. Program logic will be developed using flowcharts and pseudo code. Programs will be written using any programming language.

7. **Student Outcomes and Relationship to Program Educational Objectives**

Student Outcomes		Program Educational Objectives			
		1	2	3	4
(a)	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	√	√		
(b)	An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety and welfare as well as global, cultural, social, environmental, and economic factors.	√	√		
(c)	An ability to communicate effectively with a range of audiences.	√	√	√	√
(d)	An ability to recognize ethical and professional responsibilities to engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.	√	√	√	√
(e)	An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.	√	√		√
(f)	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	√	√	√	
(g)	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.	√	√	√	

8. **Course Outcomes and Relationship to Student Outcomes**

Course Outcomes <i>After completing the course, the student must be able to:</i>	Student Outcomes*						
	a	b	c	d	e	f	g
1. Identify important steps in program development cycle.	R	R		R	R		
2. Draw a flowchart to represent the program's logic	R	R		R	R		
3. Break down programming problems into modules	R	R		R	R	R	R

*Level: I – Introduced, R – Reinforced, D – Demonstrated

Course Title: Programming Logic and Design	Date Effective: 1st Semester SY 2019-2020	Date Revised: June 27, 2019	Prepared by: Engr. Rico M. Manalo	Approved by: Engr. Winston G. Dereje	Page 2 of 6
---	---	--------------------------------	--------------------------------------	---	-------------

9. Course Coverage

Week	Topic	TLA	AT	Course Outcomes
1	Orientation and Introduction to the Course Discussion of DBTC's Mission/Vision Discussion on COs, TLAs, and ATs of the course Introduction to Computers and Logic	Lecture	Recitation	CO1 CO2
2	Tools for Developing Program Logic: Flowchart and Pseudocode Instructions	Lecture Demonstration Solving Drill Exercises	Laboratory Exercise No. 1 Drill Exercise 1	
3	Tools for Developing Program Logic: Flowchart and Pseudocode Instructions	Lecture Demonstration Solving Drill Exercises	Laboratory Exercise No.2 Online Quiz #1 Drill Exercise 2	
4	Data and Data Types, Constants and Variables, Operators and its Hierarchy Debugging Techniques: Steps/Process in Debugging Approaches, Debugging Tools	Lecture Solving Drill Exercises	Drill Exercise 3	CO1 CO3
5	Logical Control Structures: Sequence, Selection/Decision(if,if-else)	Lecture Program Demonstration Solving Drill Exercises	Laboratory Exercise No.3 Drill Exercise 4 Hands-on Practical Exam #1	
6	Preliminary Examination		Prelim Exam	CO1 CO2 CO3
7	Logical Control Structures: Selection/Decision(cascading if-else, switch-case statement)	Lecture Program Demonstration Solving Drill Exercises	Laboratory Exercise No. 4 Drill Exercise 5	CO1 CO3
8	Logical Control Structures: Selection/Decision(cascading if-else, switch-case statement)	Lecture Program Demonstration Solving Drill Exercises	Laboratory Exercise No. 5 Online Quiz #2 Drill Exercise 6	CO1 CO3

Course Title: Programming Logic and Design	Date Effective: 1st Semester SY 2019-2020	Date Revised: June 27, 2019	Prepared by: Engr. Rico M. Manalo	Approved by: Engr. Winston G. Dereje	Page 3 of 6
--	--	---------------------------------------	---	--	-------------

AUTHORIZED COPY

9	Logical Control Structures: Iteration/Loop (for, while and do-while statement)	Lecture Program Demonstration Solving Drill Exercises	Laboratory Report No. 6 Drill Exercise 7	CO1 CO3
10	Logical Control Structures: Iteration/Loop (for, while and do-while statement)-Machine Problem	Lecture	Laboratory Report No. 7 Laboratory Report No. 8 Machine Problem #1	CO1 CO3
11	Logical Control Structures: Iteration/Loop (for, while and do-while statement)		Online Quiz #3 Hands-on Practical Exam #2	CO1 CO3
12	Midterm Examination			CO1 CO3
13	Lists and Arrays: Representation, Arrays interpolation, add and delete, operators	Lecture Program Demonstration Solving Drill Exercises	Laboratory Exercise No. 9 Laboratory Report No. 10 Drill Exercise 8	CO1 CO3
14	Lists and Arrays: Representation, Arrays interpolation, add and delete, operators	Lecture Program Demonstration Solving Drill Exercises	Laboratory Exercise No. 11 Drill Exercise 9	CO1 CO3
15	Functions	Lecture Program Demonstration Solving Drill Exercises	Laboratory ExerciseNo. 12 Drill Exercise 10	CO1 CO3
16	Functions-Machine Problem		Online Quiz #3 Laboratory ExerciseNo. 13 Hands-on Practical Exam #3 Machine Problem #2	CO1 CO3
17	String Manipulation	Lecture Program Demonstration Solving Drill Exercises	Laboratory Exercise No. 14 Laboratory ExerciseNo. 15 Drill Exercise 11	CO1 CO3
18	Final Examination			CO1 CO2 CO3

10. Contribution of Course to Meeting the Professional Component

Engineering Topics – 85%

General Education – 15%

Course Title: Programming Logic and Design	Date Effective: 1st Semester SY 2019-2020	Date Revised: June 27, 2019	Prepared by: Engr. Rico M. Manalo	Approved by: Engr. Winston G. Dereje	Page 4 of 6
---	--	---------------------------------------	---	---	-------------

AUTHORIZED COPY

11. Textbook

Data Structures and Algorithms in C++, 4th Edition by Adam Drozdek, Cengage
C++ Programming: Program Design Including Data Structures by D.S. Malik, MindTap

12. Lifelong-Learning Opportunities

Use of other programming languages such as Java and C# for programming assignments.

13. Course Evaluation

Student performance will be rated based on the following:

Assessment Tasks		Weight	Minimum Average for Satisfactory Performance
CO1	Recitation	3	2.1
CO2	Laboratory Report No. 1	2	1.4
	Laboratory Report No. 2	2	1.4
	Drill Exercise 1	1.5	1.05
	Drill Exercise 2	1.5	1.05
	Online Quiz #1	3	2.1
	Prelim Exam	5	3.5
CO3	Laboratory Report No. 3	2	1.4
	Laboratory Report No. 4	2	1.4
	Laboratory Report No. 5	2	1.4
	Laboratory Report No. 6	2	1.4
	Laboratory Report No. 7	2	1.4
	Laboratory Report No. 8	2	1.4
	Laboratory Report No. 9	2	1.4
	Laboratory Report No. 10	2	1.4
	Laboratory Report No. 11	2	1.4
	Laboratory Report No. 12	2	1.4
	Laboratory Report No. 13	2	1.4
	Laboratory Report No. 14	2	1.4
	Laboratory Report No. 15	2	1.4
	Drill Exercise 5	1.5	1.05
	Drill Exercise 6	1.5	1.05
	Drill Exercise 7	1.5	1.05
	Drill Exercise 8	1.5	1.05
	Drill Exercise 9	1.5	1.05
	Drill Exercise 10	1.5	1.05
	Drill Exercise 11	2	1.4
	Hands-on Practical Exam #1	5	3.5
	Hands-on Practical Exam #2	5	3.5
	Hands-on Practical Exam #3	5	3.5
	Machine Problem #1	4	2.8
	Machine Problem #2	4	2.8
	Online Quiz #2	3	2.1
	Online Quiz #3	3	2.1
	Midterm Exam	6	4.2
	Final Exam	10	7
TOTAL		100%	70%

Course Title: Programming Logic and Design	Date Effective: 1st Semester SY 2019-2020	Date Revised: June 27, 2019	Prepared by: Engr. Rico M. Manalo	Approved by: Engr. Winston G. Dereje	Page 5 of 6
---	---	--------------------------------	--------------------------------------	---	-------------

AUTHORIZED COPY

The final grades will correspond to the weighted average scores shown below:

Low	High	Grade
0.00%	69.99%	5.00
70.00%	73.00%	3.00
74.01%	76.00%	2.75
77.01%	79.00%	2.50
80.01%	82.00%	2.25
83.01%	85.00%	2.00
86.01%	89.00%	1.75
90.01%	93.00%	1.50
94.01%	96.00%	1.25
97.01%	100.00%	1.00

Other Course Policies

- a. Attendance
According to CHED policy, the total number of absences by the students should not be more than 20% of the total number of meetings or 6 hours for a two-unit-course. Students incurring more than 21 hours of unexcused absences automatically get a failing grade regardless of class standing.
- b. Submission of Assessment Tasks
Late submissions of documents and project will not be accepted.
- c. Language of Instruction
Lectures, discussion, and documentation will be in English. Written and spoken work may receive a lower mark if it is, in the opinion of the instructor, deficient in English.
- d. Honor, Dress and Grooming Codes
All of us have been instructed on the Dress and Grooming Codes of the Institute. We have all committed to obey and sustain these codes. It will be expected in this class that each of us will honor the commitments that we have made.
For this course the Honor Code is that there will be no plagiarizing on written works. Proper citation must be given to authors whose works were used in the process of developing the final thesis document.
- e. Consultation Schedule
Consultation schedules with the Professor are posted outside the Faculty room. It is recommended that the student first set an appointment to confirm the instructor's availability.

14. Course Materials

- 14.1. Syllabus
PowerPoint Presentations

15. Committee Members

MANALO, RICO (M)
RUIZ, RAMON STEPHEN RUIZ (L)

Course Title: Programming Logic and Design	Date Effective: 1st Semester SY 2019-2020	Date Revised: June 27, 2019	Prepared by: Engr. Rico M. Manalo	Approved by: Engr. Winston G. Dereje	Page 6 of 6
---	---	--------------------------------	--------------------------------------	---	-------------