

Subject: INTRODUCTION TO PROGRAMMING

Professor: Dra. Mayra Trejo

Engineering Program: 1° ISEC A



UNIVERSIDAD
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Subject: INTRODUCTION TO PROGRAMMING

Syllabus

PROFESSOR: Dra. Mayra Trejo

Engineering Program: : 1° ISEC A

LEARNING PURPOSE OF THE SUBJECT	The student will translate mathematical expressions into programming languages by developing basic codes, flowcharts, and programming fundamentals to solve simple problems.		
QUARTER	First		
TOTAL HOURS	75	WEEKLY HOURS	5

EXPEXTED OUTCOME TO WHICH THE SUBJECT CONTRIBUTS

HIGH-LEVEL OUTCOME:

LEARNING UNITS	TOTAL HOURS	PICE SUBMISSION DEADLINE
Fundamentals of programming	25	FEBRUARY 5
Programming languages	13	FEBRUARY 26
Algorithms	37	APRIL 23
TOTAL	75	

Grading Policy (From Doc.: Academic Guidelines)

✓ Evaluation scale is twofold:

I. Competent (approved):

- a) Competent
- b) Independent
- c) Advanced Basic
- d) Basic

II. Not Competent (not approved).

According to the next criteria:

Achieved Grade	Registered Grade
0.0 to 6.99	6 Not Competent (NC)
7.0 to 7.49	7 Basic (BU)
7.50 to 8.49	8 Advanced Basic (BA)
8.50 to 9.49	9 Independent (I)
9.50 to 10.00	10 Competent (C)

✓ The student must approve every single learning unit in order to approve the subject.

✓ Types of Assessment

- I. Ordinary;
- II. Extemporaneous;
- III. Extraordinary;
- IV. Special.

✓ The minimum attendance rate for regular assessments will be 80%.

Teacher's contact information

E-mail: mayra.trejo@upy.edu.mx

Schoology: XXXXXX

Schedule

Class Schedule

Wednesday 7:00 - 8:40 hrs

Fryday 7:00 - 9:50 hrs

LEARNING UNITS

LEARNING UNIT	I. Fundamentals of programming
EXPECTED OUTCOME	The student will formulate algorithms in natural language to solve problems .
HOURS	25

TOPICS	KNOWLEDGE	KNOW-HOW	SESSION DATES
Introduction to Programming	<p>Identify the types of programming languages, their characteristics and applications:</p> <ul style="list-style-type: none"> - Machine language - Assembly languages - Low level - High level - Orientations to procedures and objects <p>Explain the concept of application and system software</p>	Classify different types of programming languages	WEEK 1
Data types and expressions	<p>Define the characteristics of variables and constants</p> <p>Distinguish the types of computational data:</p> <ul style="list-style-type: none"> - Numeric - Logic - String and characters - Arrangements <p>Describe the representation of computational data:</p> <ul style="list-style-type: none"> -Variables -Constants 	<p>Determine data types for troubleshooting</p> <p>Interpret data types in codes</p>	WEEK 2



	<p>Explain the types of computational operations:</p> <p>With operators:</p> <ul style="list-style-type: none"> - Arithmetic - Logic - Relationships <p>With operands:</p> <ul style="list-style-type: none"> - Variables - Constants <p>With expressions:</p> <ul style="list-style-type: none"> - Arithmetic - Logics 		
Methodology for problem solving	<p>Explain the phases in solving a problem:</p> <ul style="list-style-type: none"> - Analysis of the problem - Algorithm design - Coding - Compilation and execution - Check - Debugging - Maintenance - Documentation <p>Define the concepts and characteristics of the algorithms .</p> <p>Define the concept of flowcharts</p>	<p>Raise algorithms for everyday situations .</p> <p>Formulate problem solving algorithms .</p> <p>Represent arithmetic and logical expressions algorithmically.</p>	WEEK 3,4
	HOURS OF KNOWLEDGE: 13	HOURS OF KNOW-HOW: 12	

ASSESSMENT PROCESS		
PERFORMANCE EVIDENCE	%	ASSESSMENT INSTRUMENTS
Participation in the class	25	Portfolio of evidence
Homeworks	25	Portfolio of evidence
Project	50	Portfolio of evidence
TOTAL	100%	

LEARNING UNIT	II. Programming Languages
EXPECTED OUTCOME	The student will detect the elements of structure and errors in pseudocode and flow diagrams to contribute the functionality of algorithms
HOURS	13

TOPICS	KNOWLEDGE	KNOW-HOW	SESSION DATES
Structure of a program	<p>Identify the structure of computer programs:</p> <ul style="list-style-type: none"> - Headboard - Libraries - Variables - Function - Start - Body - The end <p>Differentiate the elements of computer programs:</p> <ul style="list-style-type: none"> - reserved words - Identifiers - constants - Operators - Punctuation marks <p>Explain the concept of pseudocode</p>	<p>Locate the sections of the computational structures in a code.</p> <p>Locate the elements of a computer program in a code.</p> <p>Develop pseudocodes in natural language</p> <p>Run computer programs</p>	WEEK 5-6
Debugging a program	<p>Identify the types of errors in computer programs:</p> <ul style="list-style-type: none"> - Syntax - Logic - Execution 	<p>Detect syntax and logic errors in flowcharts , pseudocode, and code</p>	WEEK 7-8
	HOURS OF KNOWLEDGE: 6	HOURS OF KNOW-HOW: 7	



ASSESSMENT PROCESS		
PERFORMANCE EVIDENCE	%	ASSESSMENT INSTRUMENTS
Participation in the class	25	Portfolio of evidence
Homeworks	25	Portfolio of evidence
Project	50	Portfolio of evidence
TOTAL	100%	

LEARNING UNIT	III. Algorithmics
EXPECTED OUTCOME	The student will develop algorithms to solve problems .
HOURS	24

TOPICS	KNOWLEDGE	KNOW-HOW	SESSION DATES
Algorithm representation	<p>Differentiate the control structures in the design and construction of an algorithm:</p> <ul style="list-style-type: none"> - Selective structures - Repetitive structures - Nested structures <p>Describe the types of representation of algorithms:</p> <ul style="list-style-type: none"> - Written: pseudocode - Graph: Flow diagram 	<p>Represent algorithmic structures in the form of pseudocode and flow diagram .</p> <p>Program algorithmic solutions in C</p>	WEEK 9-7
Subfunctions	<p>Explain the fundamentals of the modular programming methodology .</p> <p>Describe the concept of subalgorithm .</p> <p>Differentiate the types of modules:</p> <ul style="list-style-type: none"> - Functions - Procedures 	<p>Represent algorithms in the form of functions and procedures .</p> <p>Determine the functions and procedures that make up the solution to a problem .</p> <p>Program structured functions in C language</p>	WEEK 8-15
	HOURS OF KNOWLEDGE: 6	HOURS OF KNOW-HOW: 18	



ASSESSMENT PROCESS		
PERFORMANCE EVIDENCE	%	ASSESSMENT INSTRUMENTS
Participation in the class	10	Portfolio of evidence
Homeworks	10	Portfolio of evidence
Project	80	Portfolio of evidence
TOTAL	100%	



CODE OF CONDUCT IN THE CLASSROOM

Mutual respect

Honesty

Integrity

Punctuality

Food is not allowed (only water is accepted)

No use of cell phone or any other communication device in classes

Listen closely to classmates at exhibitions

No smoking in indoor areas (or UPY facilities)

Keep the classroom clean

Keep desks ordered

English must be used as communication language

BIBLIOGRAPHIC REFERENCES

AUTHOR	YEAR	DOCUMENT TITLE	PLACE OF PUBLICATION
Mihaela Juganaru	2014	<i>Introducción a la programación</i>	México
Joyce Farrell	2013	<i>Introducción a la programación: lógica</i>	México
Zed A. Shaw	2015	<i>Learn C the Hard Way</i>	USA
Delores Etter	2013	<i>Engineering Problem Solving with C</i>	USA
Brian W. Kernighan Dennis M. Ritchie	2003	<i>El Lenguaje de Programación C</i>	USA
Steve Oualline	1997	<i>Practical C Programming</i>	USA