Subject: Advance Programming
Syllabus

PROFESSOR: Luis Gerardo Cámara Salinas
Engineering Program: EMBEDDED SYSTEMS ENGINEERING

LEARNING PURPOSE OF THE SUBJECT	The student will develop software, implementing models, development methodologies, test methodologies, for its application to embedded systems.
QUARTER	Third
TOTAL HOURS	90

	WEEKLY HOURS	6

LEARNING UNITS	TOTAL HOURS	PICE SUBMISSION DEADLINE
Software Development Models	11	17/05/2021
Software Development	30	25/07/21
Software Quality Methods	25	06/08/2021
Software Implementation	24	
TOTAL	90	

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.

Teacher's contact information

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Red Virtual UPY: lcamara

Schedule

Class Schedule	Monday 9:50 – 11:30 hrs	Tuesday **12:30** – 14:10 hrs	Thursday **12:30** – 14:10 hrs

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LEARNING UNITS

LEARNING UNIT	**I.** Software Development Models
EXPECTED OUTCOME	The student will adapt development models to outline software projects.
HOURS	11

TOPICS	KNOWLEDGE	KNOW-HOW	SESSION DATES
Software development life cycle	Define the concept of life cycle. Describe the elements of the life cycle: requirements analysis, design, implementation, verification and maintenance	Outline software development projects.	Week 1
Software development models	Describe the characteristics of software development models. Explain the characteristics of software development models: Prototype model Spiral model Development model by stages Incremental or iterative model Waterfall model	Adapt project development schemes to software development models.	Week 2

ASSESSMENT PROCESS		
PERFORMANCE EVIDENCE	%	ASSESSMENT INSTRUMENTS
Portfolio	30	Rubric Checklist
Project	50	Rubric Checklist

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Quiz	20	Rubric Checklist
TOTAL	100%	

LEARNING UNIT	**II.** Software Development
EXPECTED OUTCOME	The student will plan the development of the software, for its implementation.
HOURS	30

TOPICS	KNOWLEDGE	KNOW-HOW	SESSION DATES
Software development philosophies	Explain software development philosophies: Lean and Agile.	Develop software according to the agile philosophy. Develop software according to the lean philosophy. .	Week 3
Software Development Methodologies	Explain software development methodologies: Scrum, Kanban, XP and TPS.	Develop software according to software development methodologies.	Week 4
Software development cycle tools	Explain the tools of the software development cycle: Sprints, Boards, Cohort Analysis and Pair Programming.	Implement the tools of the software development cycle.	Week 5, Week 6

ASSESSMENT PROCESS		
PERFORMANCE EVIDENCE	**%**	**ASSESSMENT INSTRUMENTS**
Portfolio	30	Rubric Checklist
Project	50	Rubric Checklist
Quiz	20	Rubric Checklist
TOTAL	100%	

LEARNING UNIT	III. Software Quality Methods
EXPECTED OUTCOME	The student will develop a program data protection, to mitigate and minimize ries g os in databases.
HOURS	25

TOPICS	KNOWLEDGE	KNOW-HOW	SESSION DATES
Validation Techniques	Identify software validation techniques. Explain software validation techniques: - Equivalent partitions - Edge	Validate developed software	Week 7
Software Quality Testing	Explain the operation and syntax of input and output instructions of digital signals in the programming of rapid prototyping cards.	Validate the quality of the software developed .	Week 8
Quality Metrics	Explain the quality metrics: - Test plan - Error analysis document - Requirements matrix - Test cases	Validate software tests	Week 9

ASSESSMENT PROCESS		
PERFORMANCE EVIDENCE	**%**	**ASSESSMENT INSTRUMENTS**
Portfolio	30	Rubric Checklist
Project	50	Rubric Checklist
Quiz	20	Rubric Checklist
TOTAL	100%	

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LEARNING UNIT	IV. Software Implementation
EXPECTED OUTCOME	The student will implement libraries and subroutines to patent the developed software
HOURS	24

TOPICS	KNOWLEDGE	KNOW-HOW	SESSION DATES
Specialized libraries	Explain the characteristics of specialized libraries and subroutines.	Implement libraries and subroutines.	Week 10
Software licensing and intellectual property	Describe the elements of the software license. Describe the software license classification.	License software development patent processes.	Week 11, Week 12

CODE OF CONDUCT IN THE CLASSROOM

Mutual respect
Honesty
Integrity
Listen closely to classmates at exhibitions
Empathy

BIBLIOGRAPHIC REFERENCES

AUTHOR	YEAR	DOCUMENT TITLE	PLACE OF PUBLICATION
Zed A. Shaw	2005	Learn C the Hard Way	US
Delores etter	2008	Engineering Problem Solving with C	US
Brian W. Kernighan Dennis M. Ritchie	2003	*The C Programming Language*	US
Steve Oualline	1997	*Practical C Programming*	US
Silberschatz, A.	2014	Database Fundamentals	US