SUBJECT PROGRAM

I. IDENTIFICATION OF THE SUBJECT

Subject: **Computer Architecture and Organization**			Acronym **INF-245**	Approval date 01/20/2015 (CC.DD. Agreement 01/2015)		
UTFSM Credits : **3** SCT Credits : **5**		Prerequisites: **ILI-134 or INF-134**	Exam: **Does not have**	Faculty **Computing**		
Weekly Lecture Hours : **3**		Weekly Assistantship Hours: **1.5**	Weekly Laboratory Hours: **0.3**	Semester in which it is taught		
				Odd	Even	Both **X**
Formative axis: **Applied Engineering and Computer Systems**						
Total time dedicated to the subject: **150 chronological hours**						

Subject Description.

The subject provides the fundamental concepts that allow us to understand the organization of modern computers and approach a discipline that is constantly changing and that is essential for creating efficient software systems. Furthermore, it shows the interdependence between computer programs and the hardware architecture that supports them.

Entry requirements.

- Knowledge of formal logic.
- Knowledge and application of a programming language such as C, Java or Python.

Contribution to the graduation profile.

- Incorporate a dynamic of permanent updating of their skills, typical of a rigorous, effective, and efficient task, based on their determination and tenacity.

Specific Competition.

- Understand and analyze the operation of computers at the level of hardware, operating system, digital communications, and distributed systems.

Elements of Competencies.

- Analyzes and verifies the strong interaction between hardware and software, the operation of the components of a digital processor and the factors that affect its performance.
- Understands the conception and operation of a processor and the associated digital circuits.

Transversal Competencies.

- Communicate oral and written information effectively within the organizations in which one works, as well as with entities in the environment.
- Incorporate a dynamic of permanent updating of their skills, strengthening their innovative and entrepreneurial spirit.

Learning Results that are expected to be achieved in this subject.

- **Design** simple logical systems, **using** structured digital components. • **Explains** the logical operation of the units that make up a digital computer, **describing** their outputs versus different inputs (cause-effect).
- **Create** simple programs, **using** machine language and Assembly language.
- **Analyzes** the performance of a CPU, **monitoring** the main factors that affect different configurations.
- **Expresses** simple logic circuits in some hardware description language (HDL), **programming** simple circuits.

Thematic contents.

- Numerical systems and gates.
- Combinational systems.
- Sequential systems.
- Introduction to computer-aided design (CAD) and hardware description languages.
- Structured digital components.
- Computer architecture and machine language. • Microarchitecture.

Teaching and learning methodology.

- Expository classes.
- Autonomous Learning.
- Inquiry learning.
- Laboratory Experiences. • Project-based learning.

Evaluation and grading of the subject. (Adjusted to Institutional Regulations-Regulation No. 1).

Requirements _ approval and qualification	The evaluation of the subject consists of: Three tests C1, C2, and C3, and a T task grade. PC is the average of the three exams. $$NF = PC \times (1-\alpha) + \alpha \times T$$ $$Donde: \quad PC = \frac{C_1+C_2+C_3}{3} \qquad T \geq 60$$ $$y \qquad \alpha = \begin{cases} 0.30 & \text{Si } PC \geq 60 \\ 0 & PC \leq 30 \\ \frac{PC}{100} - 0.3 & \sim \end{cases}$$

Resources for learning. Bibliography:

Guide Text	• Harris, D. and Harris, S., “Digital Design and Computer Architecture, Second Edition”, Elsevier, 2013.
Complementary or Optional	• Patterson, D. and Hennessy, J., “Computer Organization and Design, Fourth Edition: The Hardware/Software Interface”, Elsevier, Morgan Kaufmann, 2011. • Virtual platform.

CALCULATION OF NUMBER OF HOURS OF DEDICATION - (SCT-Chile) - SUBJECT SUMMARY TABLE.

ACTIVITY	Number of hours of dedication		
	Number of hours by hours	Number of	Total number of weeks weeks
PRESENCE			
Lecture or theoretical classes	3	fifteen	Four. Five
Assistantship/Exercises	1.5	12	18
Industrial visits (from Field)			
Laboratories / Workshop	1	5	5
Evaluations (exams, others)	1.5	3	4.5
Others (specify)			
NO PRESENCE			
Assistantship			
Mandatory tasks	3	4	12
Personal Study (Individual or group)	4	fifteen	60
Others (Laboratory Preparation)	1	5	5
TOTAL (HOURS)			**150**
Total number of TRANSFERABLE CREDITS			**5**