

SUBJECT PROGRAM

I. IDENTIFICATION OF THE SUBJECT

Subject: Operating Systems		Acronym: INF-246	Approval date 04/24/2017 (Agreement 07/2017)		
UTFSM credits: 3	Prerequisites: INF-245	Exam: Does not have	Faculty		
SCT Credits: 5			Computing		
Lecture Hours Weekly: 3	Assistantship: Yes it has	Laboratory: Does not have	Semester in which it is taught		
			Odd	Pair X	Both
Formative axis: Applied Engineering - Development and Management of ICT Infrastructure					
Total time dedicated to the subject: 146 chronological hours					

Subject Description

The student acquires concepts and principles of operating systems, their design and construction. Develop skills to program applications based on the services provided by the operating system at the system call level.

Entry requirements

- Understand computer architectures.
- Program with the C language.
- Understand how data structures are applied.

Contribution to the graduation profile

Specific Competence

- Analyze problems that can be solved computationally, design algorithms and program the solutions using the appropriate tools in terms of programming language and data structures. **Transversal Competencies**
- Communicate oral and written information effectively within the organizations in which one works, as well as with entities in the environment.
- Act with autonomy, flexibility, initiative, and critical thinking when facing professional problems.
- Incorporate a dynamic of permanent updating of their skills, strengthening their innovative and entrepreneurial spirit.
- Develop their work with solid criteria that allow you to ensure quality from a systemic perspective.

Learning outcomes expected to be achieved in this subject

- **Describes** the objectives, structure, and functions of current operating systems, **relating them** to specific instances (for example, Linux).
- **Explains** the architecture of an operating system, which includes its structure, components and relationships, also **integrating** the associated mechanisms and policies.
- **Describes** the main concurrency control problems, **applying** the appropriate solution techniques.
- **Analyzes** the different methods and policies of task scheduling and processor allocation, **evaluating** how they influence system performance.
- **off** of a hierarchical memory organization, **selecting** the mechanisms and policies that achieve better performance.
- **Determines** the organization of data storage on persistent media, **analyzing** the associated access methods.

Thematic contents

- Organization and structure of a modern operating system.
- Task planning, interruption and time management.
- Programming interfaces and system calls.
- Memory management, virtual memory and page replacement algorithms.
- Processes, concurrency and synchronization mechanisms.
- Disk and file system management.

Teaching and learning methodology

- Expository classes supported by visual media.
- Task development.
- Resolution of problems and cases.
- Presentation of implementation cases in different operating systems

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

Approval and qualification requirements	Assessment: <ul style="list-style-type: none"> • Two exams, each corresponding to half of the subject. • Three tasks with a direct application of the knowledge acquired during class. Final grade calculation: <ul style="list-style-type: none"> • $(0.7*((cert1+cert2)/2)+0.3*((task1+task2+task3)/3)$
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Learning resources Bibliography:

Guide Text	<ul style="list-style-type: none"> • Abraham Silberschatz. (2012). “Operating System Concepts”, 9th Edition, Wiley.
Complementary or Optional	<ul style="list-style-type: none"> • William Stallings, Operating Systems. (2014). Internals and Design Principles (8th Edition), Prentice Hall. • Andrew S. Tanenbaum and Herbert Bos. (2014) "Modern Operating Systems" (4th Edition), Prentice Hall. • Robert Love, Linux System Programming. (2013). Talking Directly to the Kernel and C Library, O'Reilly.

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

ACTIVITY	Number of hours of dedication		
	Number of hours per week	Number of weeks	Total number of hours
PRESENCE			
Lecture or theoretical classes	3	fifteen	Four. Five
Assistantship/Exercises	1.5	17	25.5
Industrial visits (Field)			
Laboratories / Workshop			
Evaluations (exams, others)	2	2	4
Others (specify)			
NO PRESENCE			
Assistantship			
Mandatory tasks	5	4	twenty
Personal Study (Individual or group)	3	17	51
Others (specify)			
TOTAL (HOURS)			146
Total number of TRANSFERABLE CREDITS			5