UNIVERSIDADE FEDERAL DO CEARÁ

FEDERAL UNIVERSITY OF CEARÁ
OFFICE OF THE VICE PROVOST FOR UNDERGRADUATION (PROGRAD)
COORDINATION FOR PROJECT AND CURRICULUM DEVELOPMENT
CURRICULUM DEVELOPMENT DIVISION

1. Academic unit offering the curricular component (Faculty, Center, Institute, Campus)**:**

Center of Technology

2. Department offering the curricular component (when applicable)**:**

Teleinformatics Engineering Department

3. Undergraduate course(s) offering the curricular component

Code of the Course	Name of the Course	Course Degree[1]	Curriculum (Year/ Semester)	Nature of the Component[2]	Semester of Offer[3]	Habilitation[4]
91	Telecommunications Engineering	Bachelor	2015.1	Optional	-	-

4. Name of the curricular component:
Microprocessor Systems

5. Code of the curricular component (filled by PROGRAD)**:**
TI0144

6. Prerequisites	No ( )	Yes (x)	
		Code	Name of the curricular component / activity
		TI0110	Digital Circuits

7. Corequisite	No (x)	Yes ( )	
		Code	Name of the curricular component / activity

8. Equivalences	No ( )	Yes (x)	
		Code	Name of the curricular component / activity
		TI0051	Microprocessor Systems
		TH0172	Microprocessors

9. Day period of the curricular component (more than one option can be selected)**:**
(x) Morning (x) Afternoon (x) Night

---

1 **Fill with*Bachelor (Engineer), Licenciate or Technician*.**
2 **Fill with *Mandatory, Optional,* or *Elective.***
3 **Fill when mandatory.**
4 **When elective, fill with the habilitation or emphasis to which the curricular component is linked.**

10. Regime of the curricular component:

(x) Semester ( ) Yearly ( ) Modular

11. Justificatory for the creation/regulamentation of this curricular component

All computational systems have microprocessors and/or microcontrollers in their hardware architecture. These systems are used in all types of general purpose automation, control and computation tasks, making the knowledge on the design and analysis of them fundamental to computer engineers.

12. Objectives fo the curricular component:

Enable the student to analyze and design computer architectures based on microprocessors/microcontrollers providing the fundamentals of their architectures, as well as the low-level programming (in assembly language) and high-level (C language).

13. Syllabus:

Computer evolution history. Basic digital computer architecture. Von Neumann architecture. Harvard Architecture. Addressing modes. Memory interface. Parallel interfaces. Serial interfaces. Programmed temporization and counting. Interruptions. Analog-Digital Conversion. Case study of a real microprocessor. Case study of a real microcontroller. Programming.

14. Workload description

Number of Weeks:	Number of Credits:	Total Workload in Hours:	Theory Workload in Hours:	Practice Workload in Hours:
16	06	96	64	32

15. Basic bibliography:

1- Brey, Barry B.; Intel microprocessors : 8086/8088, 80186/80188, 80286, 80386, 80486 pentium, Pentium Pro Processor, Pentium II, Pentium 4, and Core2 with 64bit extensions : architecture, programming, and interfacing , The, 8th edition, Prentice – Hall; International editions, 2009.

2- Brey, Barry B,; Applying PIC18 Microcontrollers: Architecture, Programming, and Interfacing using C and Assembly

3- Ramesh, Puvvada; Microprocessors and Interfacing; Lambert Academic Publishing, 2011.

16. Complementary bibliography:

1- Richard Detmer. 2014. Introduction to 80x86 Assembly Language and Computer Architecture (3rd ed.). Jones and Bartlett Publishers, Inc., USA.

2- David A. Patterson and John L. Hennessy. 2013. Computer Organization and Design, Fifth Edition: The Hardware/Software Interface (5th ed.). Morgan Kaufmann Publishers Inc., San Francisco, CA, USA.

3- Volnei A. Pedroni. 2010. Circuit Design and Simulation with Vhdl, Second Edition (2nd ed.). The MIT Press

4- David Harris and Sarah Harris. 2012. Digital Design and Computer Architecture, Second Edition(2nd ed.). Morgan Kaufmann Publishers Inc., San Francisco, CA, USA.

5- Irvine, Kip R. 2014.; Assembly Language for x86 Processor; 7th Edition. Ed. Prentice Hall.