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 Sciences

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

Mathematics 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	Mandatory	01	-

4. Name of the curricular component:
Fundamentals of Calculus

5. Code of the curricular component (filled by PROGRAD)**:**
CB0664

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

7. Co-requisite	No (x)	Yes ( )	
		Code	Name of the curricular component / activity

8. Equivalences	No ( )	Yes (x)	
		Code	Name of the curricular component / activity
		CB0695	Fundamentals of Calculus

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

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[1]   **Fill with *Bachelor (Engineer), Licenciate,* or *Technologist.***
[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.**

(x) Morning	(x) Afternoon	(x) Night

10. Regime of the curricular component:
( ) Semester   (x) Yearly   ( ) Modular

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

Many specific engineering disciplines have contents that were developed on top of the basic principles of Differential and Integral Calculus, its applications, and its extensions, including, in these extensions, the numerical methods and the sequences and series of functions. These brief considerations already justify the need for the course of Fundamental Calculus for the formation of the telecommunications engineer.

12. Objectives for the curricular component:

Provide the average undergraduate student with a solid background on the key concepts and tools of Differential and Integral Calculus and their applications, which are necessary prerequisites for the systematic study of theories of electromagnetism, of electrical circuits, of signals and signal transmission systems, of control and of error correcting codes.

13. Syllabus:

Limits. Derivatives. Newton's method. Maxima and minima. Fundamental theorems of differential and integral calculus of a single variable. Taylor series. Definite and indefinite integrals. Numerical approximation of integrals. Calculation of zeros of functions. Areas between curves. Volumes. Integration methods. Conics. Hyperbolas.

14. Workload description

Number of Weeks:	Number of Credits:	Total Workload in Hours:	Theory Workload in Hours:	Practice Workload in Hours:
32	08	128	128	-

15. Basic bibliography:

1- Cálculo, Tom M. Apostol, Vols. I e II;

2- Um Curso de Cálculo, H. Guidorizzi, Vols. I, II e IV;

3- Cálculo e Geometria Analítica, G.B. Thomas Jr. E R. L Finney Livros Técnicos e Científicos Editora Ltda, vols 1 e 2.

16. Complementary bibliography:

1- Cálculo, L. Leithold, Vol. I;

2- Análise Real, E. L. Lima, Vol. I.