COURSE GUIDE

Dean, Prof. Daniela Tarniceriu

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1. Program info

1.1 Higher education institution	"Gheorghe Asachi" Technical University of Iaşi
1.2 Faculty / Department	Electronics, Telecommunications and Information Technology
1.3 Department	Telecommunications and Information Technologies
1.4 Field	Electronic Engineering, Telecommunications and Information Technology
1.5 Study level	Bachelor
1.6 Study program / Qualification	Telecommunications Systems and Technologies

2. Course info

2.1 Course name: Mathematical Analysis		Code: EBIF 101				
2.2 Course organizer (lecturer)		Sânziana Caraman				
2.3 Teaching assistants		Sânziana Caraman				
2.4 Year of study	I	2.5 Semester	1	2.6 Assessement	Exam	2.7 Type of subject

3. Estimated total time (hours per semester for teaching activities)

3.1 Number of hours per week	4	3.2 lecture	2	3.3 seminar/laboratory	2
3.4 Total number of hours in curricula	56	3.5 lecture	28	3.6 seminar/laboratory	28

Time distribution	hours
Textbook, course support, references and course notes study	12
Library, electronic platforms and on site documentation	10
Seminar/laboratory preparation, homework, reports, portfolios and essays	12
Tutoring	10
Assessment	6
Other activities	6

3.7 Total individual study hours	64

3.9 Total hours per semester	120
3. 10 Number of credit points	5

4. Prerequisites (where applicable)

4.1 curricula type	11 grade mathematical Analysis
4.2 competence type	

5. Infrastructure (where applicable)

5.1. for lectures	Black/white board
5.2. for laboratories	

6. Specific competences

Professional competences	The main goal of this course is to create a part of the foundation of knowledge which is necessary in covering the electronic engeneering disciplines. Alongside the other disciplines, this one contributes to the improvement of the level of knowledge and, consequently, prepares the student for the incoming professional challenges.
Transversal competences	The students will know the mathematical results required in the study of the fundamental disciplines and technical disciplines.The students will prove the capacity of solving typical applicative problems and to describe mathematical reasoning.

7. Course targets (as resulting from **6. Specific competences** table)

7.1 Course main target	This discipline has a fundamental character, giving to students basic mathematical tools that are necessary in assimilating other subjects, both fundamental (like Physics, Theoretical Mechanics, Numerical methods) and of a technical profile as well, included in the Curriculum of the Electronic Engineering domain.
7.2 Course specific targets	The development of thinking, the increasing of analysis and synthesis ability, the development of intuition are goals of this course.

8. Contents

8. 1 Lectures	**Teaching methods**
1.Sequences of real numbers - The set of real numbers. - Convergent sequences/divergent, main theorems from the theory of convergent sequences,Cauchy sequences. Standard limits. - Limit points of a sequence.	Interactive lecture discussions, explanations
2. Series of real numbers	Interactive lecture discussions, explanations

-Convergent series and divergent series,general properties,operations with series - Series with nonnegative terms,tests of convergence -.Series with arbitrary terms:absolutely convergent series,conditionally convergent series,criteria of convergence	
3.Metric spaces and normed spaces R^n - Metric spaces,sequences in metric spaces - Normed sapces - The space R^n	Interactive lecture discussions, explanations
4. Limits of functions and continuity – Limits of real functions of one variable and of several variables and for vector function, characterization theorems,examples. – The continuity of functions,theorem of characterization,examples.	Interactive lecture discussions, explanations
5. Differential calculus for real functions. -The definition of the derivative -The derivatives of the elementary functions. -Higher order derivative -Applications of the derivatives. -The differential - The formula of Taylor. **6.Differential calculus for functions of several variables** – Partial derivatives of first order and of higher order – Differentials of first and second order – Partial derivatives of compound functions – Special combinations of partial derivatives – Taylor's Formula and extrema of functions of several variables	Interactive lecture discussions, explanations
7.Sequences and series of function -Sequences of functions -Series of functions -Power series -The expansion of a function into a power series.	Interactive lecture discussions, explanations
References:1 S.Caraman,Lecture notes on mathematical	

analysis,Edit.Soc. Acad. „Matei-Teiu Botez,Iasi-2008
2. P. Georgescu, Elemente de calcul diferenţial pe dreapta reală, Editura MatrixRom, Bucureşti, 2012..

3. R. Luca-Tudorache, Probleme de analiză matematică. Calcul diferenţial, Performantica, Iaşi, 2006.

4. M. Nicolescu, N. Dinculeanu, S. Marcus, Analiză matematică, Vol.I,II, Editura Didactică şi Pedagogică, Bucureşti, 1971.

8. 2 Laboratory	Teaching methods
1. Sequences of real numbers (computation of limits) 2. Series of numbers (tests of convegence)	Discussions,explanations,interpretations of results
3.Sequences in the space R^n 4.Limits of functions of one variable and of several variables,continuity of functions.	Discussions,explanations,interpretations of results
5..Derivatives and differentials for one variable function;the formula of Taylor 6.Partial derivatives of functions of several variables,differentials of first and second order, computation of partial derivatives for compound functions.	Discussions,explanations,interpretations of results
7.Formula of Taylor and points of extremum for function of several variables. 8.Sequences of functions; series of functions; power series.	Discussions,explanations,interpretations of results
References:	

9. Course contents corroboration with the expectations of the epistemic community representatives, professional associations and relevant employers in the field of the program

10. Assessment

Activity type	10.1 Assessment criteria	10.2 Assessment methods	10.3 Percentage of final grade
10.4 Lectures	The understanding of theoretical knowledge and the capacity of solving typical applicative problems	Exam	70.00%
10.5 Laboratory	The frequency and the relevance of the	Keeping a record of the interventions	30.00%

	interventions		

10.6 Minimum performance standard
Limits computation; the computation of derivatives and partial derivatives; the solving of extremun problems for several variables functions.I

Completion date: 07.09.2019 Course organizer signature,

Teaching assistant signature,

Department approval date,
11.09.2019

Department director signature,