

COURSE GUIDE
2019-2020 Academic Year

Dean,
Prof. Daniela Târnușeriu, PhD



1. Program info

1.1 Higher education institution	"Gheorghe Asachi" Technical University of Iași
1.2 Faculty / Department	Electronics, Telecommunications and Information Technology
1.3 Department	Fundamentals of Electronics
1.4 Field	Electronics : Telecommunications Engineering <i>and information Technology</i>
1.5 Study level	Bachelor
1.6 Study program / Qualification	

2. Course info

2.1 Course name:		Signals, and systems				Code: EAIA 210		
2.2 Course organizer (lecturer)		Prof. Iulian Ciocoiu, PhD (lecturer)						
2.3 Teaching assistants		Lecturer Paul Ungureanu, PhD						
2.4 Year of study	2	2.5 Semester	4	2.6 Assessment	Continuous Exam	2.7 Category	DI	

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

5. Estimated total time (hours per semester for teaching activities)									
3.1 Number of hours per week	6	3.2 lecture	3	3.3a sem.	-	3.3b lab	3	3.3c project	-
3.4 Total number of hours in curricula ¹	84	3.5 curs	42	3.6a sem.	0	3.6b lab	42	3.6c project	0
Time distribution ²								hours	
Textbook, course support, references and course notes study								14	
Library, electronic platforms and on site documentation								12	
Seminar/laboratory preparation, homework, reports, portfolios and essays								26	
Tutoring								14	
Assessment								32	
Other activities									
3.7 Total individual study hours	84								
3.9 Total hours per semester	168								
3.10 Number of credit points	7								

4. Prerequisites (where applicable)

4.1 curricula type	1. -
4.2 competence type	2. Signals, Circuits & Systems 1

5. Infrastructure (where applicable)

5.1. for lectures	Computer, projector
5.2. for laboratories	Computer network

6. Specific competences³

6. Specific competences			Number of credits ⁴ :	7	Credit number according to competences ⁵
Professional competences	CP1	Understanding and practical application of analog modulation principles.	2		
	CP2	Understanding and practical application of general stability conditions of linear systems, including feedback systems.	2		
	CP3	State-space description of linear analog systems.	0.5		
	CP4	Understanding and practical application of design methods for linear analog filters.	0.5		
	CP5				
	CP6				
	CPS1				
	CPS2				
Transversal competences	CT1	Making connections between theory and applications.	1		
	CT2	Identify advantages and limitations of various signal processing principles.	1		
	CT3				
	CTS				

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

7.1 Course main target	Introduction of basic principles of analog modulation methods and linear circuit stability.
7.2 Course specific targets	Amplitude, frequency and phase modulation techniques; stability criteria for linear systems; stability criteria for linear feedback systems; state-space description of analog linear systems; introduction to analog filter design methods.

8. Contents

8.1 Lectures ⁶	Teaching methods ⁷	Notes
1. Introduction to modulation principles and methods 2. Amplitude modulation using harmonic carriers 3. Amplitude modulation using impulse-type carriers 4. Amplitude demodulation techniques 5. Frequency modulation and demodulation 6. Phase modulation and demodulation 7. Linear systems stability 8. Feedback systems stability: Nyquist criteria, root-locus 9. State-space representation of analog linear systems 10. Analog filter design methods	Lectures, PPT presentations, problem solving, discussions.	Course notes available on the Moodle platform.

References:

1. L. Goraș, **Semnale, circuite și sisteme**, Editura "Gh. Asachi" Iași 1993
2. Gh. Cartianu, s.a., **Semnale circuite și sisteme**, Editura Didactică și Pedagogică, București 1982
3. Ad. Mateescu, s.a., **Semnale circuite și sisteme**, Editura Didactică și Pedagogică, București 1980

8.2a Seminar	Teaching methods ⁸	Notes
8.2b Lab	Teaching methods ⁹	Notes
Amplitude modulation using nonlinearity of electronic devices Amplitude modulation using multiplication Amplitude modulation using impulse-type carriers Amplitude demodulation techniques Frequency modulation and demodulation Response of bandpass filters to modulated signals Harmonic oscillators using operational amplifiers	Experimental measurements, computer simulations, circuit design.	
8.2c Project	Teaching methods ¹⁰	Notes

References:

1. Ciocoiu, I.B., Leuciuc, A., **Semnale, circuite și sisteme - Îndrumar de laborator**, Editura Stef, Iași, 2007, ISBN 978-973-8961-88-3
2. Mugur Săvescu, s.a., **Semnale, circuite și sisteme - Probleme**, Editura Didactică și Pedagogică, București 1981
3. Ad. Mateescu, s.a., **Probleme de analiză și sinteza circuitelor electrice**, Editura Tehnică, București 1978

9. Course contents corroboration with the expectations of the epistemic community representatives, professional associations and relevant employers in the field of the program¹¹

The course offers a solid theoretical support for the upcoming speciality courses, along with practical and programming skills required by relevant employers in the field.

10. Assessment

Activity type	10.1 Assessment criteria	10.2 Assessment methods	10.3 Percentage of final grade
10.4 Lectures	Knowledge of theoretical aspects, problem solving	Weekly tests ¹² :	10% (minim 5)
		Homeworks:	%
		Final evaluation: written exam	80% (minim 5)
10.5a Seminar			%
10.5b Lab	Proper use of lab equipment, practical circuit implementation and measurement	Lab evaluation	10% (minim 5)
10.5c Project			% (minim 5)
10.5d Other activities ¹³			% (minim 5)

10.6 Minimum performance standard ¹⁴

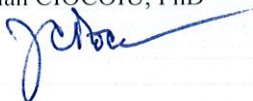
Full presence at lab activities
Mathematical expressions and typical waveforms of AM/FM signals
Definition of linear systems stability

Completion date,

23.07.2019

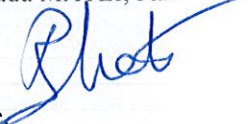
Course organizer signature,

Prof. Iulian CIOCOIU, PhD



Teaching assistant signature,

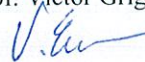
Lecturer Radu MATEI, PhD



Department approval date,

Head of department signature

Prof. Victor Grigoraș, PhD



¹ Este egal cu 14 săptămâni x numărul de ore de la punctul 3.1 (similar pentru 3.5, 3.6abc)

² Liniile de mai jos se referă la studiul individual; totalul se completează la punctul 3.7.

³ Competențele din Grilele G1 și G1bis ale programului de studii, adaptate la specificul disciplinei, pentru care se repartizează credite (www.rncis.ro sau site-ul facultății)

⁴ Din planul de învățământ

⁵ Creditele alocate disciplinei se distribuie pe competențe profesionale și transversale în funcție de specificul disciplinei

⁶ Titluri de capitole și paragrafe

⁷ Expunere, prelegere, prezentare la tablă a problematicei studiate, utilizare videoproiector, discuții cu studenții (pentru fiecare capitol, dacă este cazul)

⁸ Discuții, dezbateri, prezentare și/sau analiză de lucrări, rezolvare de exerciții și probleme

⁹ Demonstrație practică, exercițiu, experiment

¹⁰ Studiu de caz, demonstrație, exercițiu, analiza erorilor etc.

¹¹ Legătura cu alte discipline, utilitatea disciplinei pe piața muncii

¹² Se va preciza numărul de teste și săptămânile în care vor fi susținute.

¹³ Cercuri științifice, concursuri profesionale etc.

¹⁴ Se particularizează la specificul disciplinei standardul minim de performanță din grila de competențe a programului de studii, dacă este cazul.

