SYLLABUS

1. Data about the program of study

1.1	Institution	The Technical University of Cluj-Napoca
1.2	Faculty	Automation and Computer Science
1.3	Department	Mathematics
1.4	Field of study	Electronics and Telecommunications Engineering
1.5	Cycle of study	License
1.6	Program of study/Qualification	Telecommunications Technologies and Systems/
		Engineer, Applied Electronics/ Engineer
1.7	Form of education	IF (Full-time learning)
1.8	Subject code	TST-E09.00, EA-E09.00

2. Data about the subject

2.1	Subject name				Special Mathematics								
2.2	Subject area			Mathematics									
2.3	Course responsible/lecturer					Prof. dr. Dorian Popa							
2.4	Teachers in charge of applications					Prof.	Prof. dr. Dorian Popa						
2.5	Year of study	Ι	2.6	Semester	2	2.7	Assessment	verification	2.8	Subject category	DF/DOB		
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Year/ Sem.	Type of discipline	Course	App	licati	ons	Course	Арј	plica	tions	Ind. study	ТОТ	Cr	Form of assessment
		[hours/week]			[hours/sem.]					AL	ed ite		
			S	L	Р		S	L	Р			ns	
I/2	Special Mathematics	2	2		-	28		28	-	64	120	4	Exam

Acquired competences :

Acquired skills (what the student is able to do):

Notions and concepts concerning, line integrals, multiple integrals, surface integrals and relations between them, complex functions – differentiation and integration.

Acquired abilities: (what type of equipment/instruments/software the student is able to handle)

- To operate with line integrals
- To operate with multiple integrals
- To operate with surface integrals
- To operate with complex functions

Prerequisites (if necessary)

Notions on mathematical analysis, algebra and trigonometry from high school

A. Course/Lecture (course/lecture titles)

- Course 1 Line integrals of the first kind
- Course 2 Line integrals of the second kind
- Course 3 Differential forms
- Course 4 Measurable sets in Rⁿ
- Course 5 The Riemann integral in Rⁿ
- Course 6 Evaluation of multiple integral by iteration
- Course 7 Change of variables in multiple integrals
- Course 8 Surface integrals of the first kind.
- Course 9 Surface integrals of the second kind.
- Course 10 Integral formulas: Green, Stokes, Gauss-Ostrogradski
- Course 11 -Holomorphic functions. Cauchy-Riemann equations
- Course 12 Complex integral
- Course 13 Taylor series. Laurent series
- Course 14- Residues theorem

B1.	Applications – Laboratory (list of laboratories), Seminar (contents), Project (project contents)
1	Seminar 1 – Line integrals of the first kind
	Seminar 2 – Line integrals of the second kind
	Seminar 3 – Differential forms

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Seminar 11Holomorphic functions. Cauchy-Riemann equations Seminar 12 - Complex integral Seminar 13 - Taylor series. Laurent series Seminar 14 - Residues theorem C. Individual study (reference study contents, synthesis materials, projects, applications etc.) 2 synthesis reports 12 sets of problems (the preparation part in every laboratory) 3 sets of problems (the preparation part in every laboratory) 3 sets of problems (course homework) Individual Course Problem Applicatio Examinati Additional Total no. of individual study study study study solving, ns on time reference hours		Semina Semina Semina Semina Semina Semina	ar 4 – Measur ar 5 - The Rid ar 6 – Evalua ar 7 – Change ar 8 – Surface ar 9 – Surface ar 10 - Integr	rable sets in R emann integra tion of multip e of variables e integrals of t e integrals of t al formulas: C	ⁿ l in R ⁿ le integral by in multiple in the first kind. the second kir freen. Stokes.	iteration tegrals id. Gauss-Ostrog	radski				
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project n				project	n						
Hours 28 6 18 3 9 64	Но	ours	28	6	18	3	9	64			

References(Textbooks, courses, laboratory manual, exercise book)T.Apostol, Mathematical Analysis, Addison-Wesley Publishing Company, 1981.S.Lang, Undegraduate Analysis, Springer, 1997.D. Popa, Calcul integral, Editura Mediamira, 2005.

Final evaluation	
Evoluction method	Writen paper – 3 hours containing theory and problems. After 7 courses partial
Evaluation method	evaluation (3 hours)
	Seminar S
Mark components	Theory T
	Problems P
Mark computation	N=0,2S+0,2T+0,6P

Date of filling in
18.03.2015Course responsible
Prof. Dorian POPA, PhD

Date of approval in the department 18.03.2015

Teachers in charge of applications Prof. Dorian POPA, PhD

> Head of department Prof. Mircea IVAN, PhD