NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN

COURSE OUTLINE

Course Title	Mathematics-II		
Course Code	MAIR21	No. of Credits	4
Department	CIVIL (A Section)	Faculty	Dr. V. Kumaran
Pre-requisites Course Code	10 + 2 Mathematics & MAIR11		
Course Coordinator(s) (if, applicable)	-		
Other Course Teacher(s)/Tutor(s) E-mail	kumaran@nitt.edu	Telephone No.	0431-2503670
Course Type	■ Core course	☐ Elective course	

COURSE OVERVIEW

The course develops the basic concepts of vectorpsaces, linear differential equations reducible to constant coefficients type, vector calculus, mapping of analytic functions, integration of complex functions, to apply them in various academic/industrial applications.

COURSE OBJECTIVES

Students will be able to learn the concepts of vector spaces, innerproduct spaces, linear differential equations recible to constant coefficients type, vector calculus including integration, mappings of complex analytic functions, contour integration and will be able to apply them in the relevant academic/industrial applications.

COURSE OUTCOMES (CO)

Course Outcomes	(PO's)
The students would have learnt the concepts and applications of the following: 1. Vector spaces and Inner product spaces 2. Linear differential equations reducible to constant coefficients type 3. Vector calculus 4. Analytic functions and mappings 5. Contour integration of a complex valued function	PO's 1 & 2 (in attendance book)

COURSE TEACHING AND LEARNING ACTIVITIES

Units	Week	Topic	Delevery Mode
Unit-I & II 18/1-26/2 (18-22 hrs)	1st week	Vector spaces: basis, dimension and subspaces	Chalk and Talk
	2nd week	Inner product spaces and orthogonalization	
	3rd week	problems on vector spaces and inner product spaces	
	4th week	Linear differential equations with constant coefficients	
	5th week	Euler's type, simultaneous linear differential equations	
	6th week	Variation of parameter method, Electric circuit problems	
Unit-III 27/2-19/3 (9-12 hrs)	7th week	Gradient, divergence and curl	
	8th week	Solenoidal and irrotational fields, Green's theorem	
	9th week	Stokes' theorem, Divergence theorem and applications	
Unit-IV&V 20/3-30/4 (18-24 hrs)	10th week	Analytic functions: properties, construction	
	11th week	Conformal mapping of elementary functions	
	12th week	Bilinear transformation	
	13th week	Cauchy's integral theorem, Cauchy's integral formula	
	14th week	Taylor's and Laurent's expansions, singularities, residues	
	15th week	Residue theorem ,Contour integration involving unit circle	
1/5 - 6/5	16th week	Revision/Advanced Topics	

COURSE ASSESSMENT METHODS

S.No.	Assessment Mode	Week/Date	Duration	% Weightage
01.	Tests: I-III	At the beginning of 7th , 10th, 16th weeks	72 +36 + 72 minutes	40%
02.	3 Group assignments	In 5th , 8th, 14th weeks	Next 1 week	15%
03.	Individual Assignment	In 3rd week	12 weeks	5%
04.	Re-Test	16th Week (1/5-6/5)	1 hr	
05.	Semester Exam	17th week (8/5-13/5)		40%
06.	Reassessment Exam	19th week (22/5-27/5)		

ESSENTIAL READINGS : Textbooks, reference books Website addresses, journals, etc

Reference Books:

1. Kreyszig, E., Advanced Engineering Mathematics, 10th edn, John Wiley Sons, 2010.
2. Grewal, B.S., Higher Engineering Mathematics, 43rd edition, Khanna Publications, Delhi.
3. Gilbert Strang, Linear Algebra and its applications, 4th edn, Cengage Learning, 2006
4. James Ward Brown and Ruel V. Churchill, Complex variables and Applications, 9th edn, McGraw-Hill, 2013.

Apart from these books, relevant websites and other text books may also be referred.

COURSE EXIT SURVEY

Twice in a semester students can give oral (recorded by student)/anonymous written feedback about the content, content delivery and valuation.

COURSE POLICY (including plagiarism, academic honesty, attendance, etc.)

1. Attendance: Students who are absent for classes with valid reason must inform immediately with proof. Otherwise it (ML-OD-etc.,) will not be considered.
2. Absent for tests: If reason is genuine and informed his inability to write the test in time with a written request, the student may be permitted for re-test.
3. Poor academic performance: If his/her marks in all 3 tests are below class average/2 of each test the student may be permitted for re-test.
4. If attendance in class room (excluding ML, OD, etc.,) is < 60%, "F" grade will be assigned and they have to pass the course through redo/formative assessment.
5. Permitted to write Semester Exam if
   a) attendance in class room (excluding ML, OD, etc.,) is >= 60% and
   b) attendance ((classes attended)/(classes conducted-ML-OD)) is >= 75%.
6. If they fail/absent in semester exam, reassessment exam will be conducted after evaluation of papers. If they fail in reassessment exam also, "F" grade will be assigned and they have to pass the course through formative assessment only.
7. If found copying in any form in tests/semester exam will get zero marks.

ADDITIONAL COURSE INFORMATION

The faculty is available for consultation during working hours at his office in mathematics department. Queries may also be emailed to the faculty directly at kumaran@nitt.edu

FOR SENATE'S CONSIDERATION

Course Faculty: Dr.V.Kumaran   09/01/17   **CC-Chairperson :** 18/1/17   **HOD:** 10/01/2017

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