

NATIONAL INSTITUTE OF TECHNOLOGY: TIRUCHIRAPPALLI- 620 015

DEPARTMENT OF MATHEMATICS

COURSE OUTLINE TEMPLATE			
Course Title	Mathematics – I		
Course Code	MAIR 11	No. of Credits : 4	
Department	Mathematics	Section: Mechanical	
Pre-requisites Course Code	+2 Mathematics		
Course Teacher(s)/Tutor(s)	Email Id	Telephone No.	
Dr. V. Lakshmana Gomathi Nayagam	velulakshmanan@nitt.edu	9486001191	
Course Type	Core course		
COURSE OVERVIEW			
<p>To understand the mathematical applications to engineering problems using matrix theory, convergence concepts, functions of several variables and multiple integrals.</p>			
COURSE OBJECTIVES			
<p>To acquire basic knowledge in mathematics and to apply in engineering disciplines.</p>			
COURSE OUTCOMES (CO)			
Course Outcomes		Aligned Programme Outcomes(PO)	
<ol style="list-style-type: none"> 1. To apply matrix analysis for Engineering Problems 2. To formulate real problems with multi dimensions 3. To understand the convergence and divergence in practical problems 		<p>The students will apply their knowledge of mathematics to engineering problems.</p>	
COURSE TEACHING AND LEARNING ACTIVITIES			
S.No.	Week	Topic	Mode of Delivery

	Week 1	<ol style="list-style-type: none"> 1. Review of basic definitions on Matrix Theory. 2. Finding Eigen values and Eigen vectors. 3. Finding the roots for symmetric matrices. 4. More Problems +Tutorial 	Chalk and Talk
	Week 2	<ol style="list-style-type: none"> 5. Properties of Eigen values and Eigen vectors. 6. CHT- without proof-verification. 7. Applications of CHT. 8. More problems + Tutorial. 	
	Week 3	<ol style="list-style-type: none"> 9. Diagonalization-problems. 10. More problems 11. Quadratic forms- required definitions. 12. Problems + Tutorial. 	
	Week 4	<ol style="list-style-type: none"> 13. Revision on Matrices. 14. Series-definitions- series of +ve terms. 15. Problems using the tests. 16. More Problems + Tutorial. 	Chalk and Talk
	Week 5	<ol style="list-style-type: none"> 17. More problems. 18. Alternating series- Leibnitz test 19. More problems. 20. Tutorial. 	
	Week 6	Assessment-I	Chalk and Talk
	Week 7	<ol style="list-style-type: none"> 21. Differentiation-Review. 22. Partial derivatives-problems. 23. Transformation problems 24. More problems +Tutorial 	
	Week 8	<ol style="list-style-type: none"> 25. Functions of two variables 26. Problems for max., min. 27. More problems 28. Jacobian + Tutorial 	
	Week 9	<ol style="list-style-type: none"> 29. Problems. 30. Properties of jacobian-Problems 31. More problems. 32. Revision problems + Tutorial 	

	Week 10	33. Concept of integration 34. Double and triple integration. 35. Change the order of integration 36. Problems	
	Week 11	37. More Problems +Tutorial 38. Applications of double integral 39. Problems 40. Other co-ordinate systems	
	Week 12	Assessment-II	
	Week 13	Reassessment 41. Problems 42. Conversion-problems 43. More Problems	
		Assessment-III 44. Overall revision.	Chalk and Talk

COURSE ASSESSMENT METHODS

S.No.		Week/Date	Duration	% Weightage
1.	Assessment –I	6 th week	1 Hour	20%
2.	Assessment-II	12 th week	1 Hour	20%
3.	Reassessment	13 th week	1 Hour	
4.	Assessment- III (Assignment)			10%
5.	Assessment –IV		3 Hours	50%
6.	Reassessment for Absentees & Poor scorers			
				Total : 100 Marks

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

Text Books

1. Kreyszig, E., *Advanced Engineering Mathematics, 9th edition, John Wiley Sons, 2006.*
2. Grewal, B.S., *Higher Engineering Mathematics, 42nd edition, Khanna Publications, Delhi, 2012.*
3. Hsiung, C.Y. and Mao, G.Y. *Linear Algebra, World Scientific Pub Co Inc., 1999.*

Reference Books

1. Apostol, T.M. *Calculus Volume I & II Second Edition, John Wiley & Sons (Asia) 2005.*
2. Greenberg, M.D. *Advanced Engineering Mathematics, Second Edition, Pearson Education Inc. (First Indian reprint), 2002*
3. Strauss. M.J, Bradley, G.L. and Smith, K.J. *Calculus, 3rd Edition, Prentice Hall, 2002.*
4. T Veerarajan, *Engg Mathematics for First year McGraw-Hill Education (India) Pvt Limited, 2007.*

COURSE EXIT SURVEY (mention the ways in which the feedback about the course is assessed and indicate the attainment also)

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

In case of 74%- 51% of attendance, the student should attend the mandatory classes for the required shortage of hours. If it is less than 50% , the student should redo the course.

ADDITIONAL COURSE INFORMATION

eg.: The Course Coordinator is available for consultation at times that are displayed on the coordinator's office notice board. Queries may also be emailed to the Course Coordinator directly at -----

FOR SENATE'S CONSIDERATION

Course Faculty V. Laksh

CC-Chairperson 29/9/16

HOD [Signature]