Curriculum Plan (EVEN SEM 2025): B. Sc. (H) Mathematics III Year (Semester VIII)
Paper: DSC-Field Theory and Galois Extension

Dr. Tajender Kumar

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Marks Distribution	**Theory**	90 Marks
	Tutorial	40 Marks
	Internal Assessment	Assignments 12 Marks
		Home Exams/ Class Test 12 Marks
		Attendance 6 Marks
Classes Assigned	**Lectures**	3 per week (**Theory**)
	Tut	2 per week

References		1. 1. Garling, D. J. H. (2022). Galois Theory and Its Algebraic Background (2nd ed.). Cambridge University Press. 2. Dummit, David S., and Foote, Richard M. (2011). Abstract Algebra (3rd ed.). Wiley.	
	Beginning/1st week with 2 days 02nd Jan. - 10th Jan.	**Topics** Fields and prime subfields, [2]: Chapter 13 [Section 13.1 up to Theorem 3]. [1]: Chapter 2 [Section 2.5 (page 34, Theorem 2.13, and Corollary 2.14), and Section 2.11].	
	2nd week	Field extensions, Degree of field extensions, Tower theorem. [1]: Chapter 4 [Sections 4.1, and 4.2].	

	12th Jan. – 17th Jan		
	3rd week 19th Jan. – 24th Jan.	Algebraic and transcendental extensions, Monomorphism of field extensions; [1]: Chapter 4 [Sections 4.3 to 4.5].	
	4th week 26th Jan. – 31st Jan.	Ruler and compass constructions. [1]: Chapter 5.	
	5th week 02rd Feb.- 07th Feb.	Splitting fields, Extensions of monomorphisms, Uniqueness of splitting field. [1]: Chapter 6 [Sections 6.1, 6.2, 6.3 (Theorems without proof), and 6.4].	
	6th week 09th Feb. – 14th Feb.	Normal Extensions. [1]: Chapter 7 [Sections 7.1 (Theorem 7.1 without proof, and Corollary 1 to 3), and 7.2].	
	7th week 16th Feb. – 21st Feb.	Separability and separable extensions, Monomorphisms and automorphisms of field extension. [1]: Chapter 8 [Sections 8.1, and 8.2].	
	8th week 23rd Feb. – 28th Feb.	Galois extensions. [1]: Chapter 8 [Sections 8.3].	
	9th week 09th Mar.– 14th Mar.	Automorphism/Galois groups and fixed fields [1]: Chapter 9.	
	10th week	Galois theory of polynomials, The fundamental theorem of Galois theory.	

	16th March. – 21st Mar.	[1]: Chapter 9.	
	11th week 23rd Mar. – 28th Mar.	The Discriminant, Cyclotomic polynomials. [1]: Chapter 10 [Theorem 10.1]. [1]: Chapter 11 [Sections 11.1].	
	12th week 30th Mar. – 04th Apr.	Extensions and its Galois group. [1]: Chapter 11 [Sections 11.2, 11.3, and 11.4].	
	13th week 06th Apr. – 11th Apr.	Solution by radicals. [1]: Chapter 12 [Section 12.1 (Theorem 12.1 without proof), and Section 12.2].	
	14th week 13th Apr. – 18th Apr.	Existence and Uniqueness of finite fields, Simple extensions. [1]: Chapter 15 [Section 15.1]. [1]: Chapter 17 [Sections 17.1].	
	15th week with 3 Days 20th Apr. – 29th Apr.	The primitive element theorem. [1]: Chapter 17 [Sections 17.2].	
Dispersal of classes, preparation leave and practical examination begin- 30 April, 2026.			