MAT 623 – Algebra (1)

Course Code & Number	Course Name	Credit Hours	Lec.	Lab.	Tut.	Prerequisites
MAT 623	Algebra (1)	4	3	0	1	

Syllabus:

Groups: Review of basics, Cauchy Theorem, Group Action, Orbits and stabilizers, The Class Equation, Sylow theorems, Direct Products and Direct Sums, Free abelian groups, Classifications of finitely generated abelian groups, Free Group, Presentation of groups,p-Groups, Nilpotent groups, Normal series and Jordan-Holders theorem, Solvable groups, Simple groups and simplicity ofA_n.

Rings and Fields: Review of basics, Direct products and direct sums of rings, Polynomial Rings and their factorizations, Power Series Rings, Euclidean domains, PID and UFD, Gaussian rings, Field extensions, finite algebraic extensions, Geometric Constructions, Finite Fields.

Modules: Basics, Submodules and quotient modules, Direct products and direct sums of modules, Free modules and Finitely generated modules, Modules over PID, Chain conditions on Modules, Noetherian and Artinian Modules, composition series and Jordan- Holders theorem.

References

1. D. Dummit and R. Foote; ***Abstract Algebra***; John Wiley, 3rd ed. 2003. **(Main Reference)**
2. D. Robinson; ***An Introduction to Abstract Algebra***; De Gruyter, 2003.
3. T. W. Hungerford; ***Algebra***; Springer, 1st ed. 1980.