قسم الرياضيات والإحصاء ماجستير العلوم في الرياضيات		جامعة الإمام محمد بن سعود الإسلامية كلية العلوم

Program of Master admission Exam

Title	Reference	Contents	
Algebra	1 2	Systems of linear equations- Matrices and Determinants –Vector Spaces- Eigenvalues and Eigenvectors- Diagonalization- linear transformations Mathematical induction- Method of Proofs-Relations-Operations. Properties of Groups- Normal subgroups- Quotient groups-Isomorphism Theorems- Properties of Rings- Integral domain and Fields-Ideals Euclidean Domains.	
Analysis	3 4 5	Limits of Functions- Continuous Functions- The Derivatives- Taylors Theorem. Integrals-Sequences and Infinite Series –Functions of Several Variables: Limits – Continuity and Partial Differentiations- Multiple Integrals. The Completeness Property of the set of real numbers-Supremum and Infimum- Bolzano – Weierstrass Theorem- Cauchy Criterion- Riemann Integral- Riemann Integrable Functions. Limits, Continuity, and complex Differentiations – The Cauchy- Riemann Equations- Complex integrations-Cauchy's integral formula – Complex Sequences-Series- Taylor Series- Laurent Series- Cauchy Residue Theorem.	
Diff. Equ.	6	First Order: Linear- Separable variables- Exact equation	
Proba. & Stat.	7	Probability-Random variables and probability distributions- Discrete distributions- Continuous distributions- Joint probability distributions	

REFERENCES

1) Gareth Williams: **Linear Algebra with Applications**, Eight Edition, Jones & Bartlett Learning. 2014.

2) L. Gilbert and J. Gilbert: **Elements of Modern Algebra**, Seventh Edition, Brooks Col Learning, 2009.

3) R.T. Smith and R.B. Minton: **Calculus, Early Transcendental Functions**, Fourth Edition, McGraw Hill, 2007.

4) R.G. Bartle and Sherbert: **Introduction to Real Analysis**, Third Edition, John Wiley & Sons, 2000.

5) M.J. Ablowitz and A.S. Fokas: **Complex Variables. Introduction and Applications**, Second Edition, Cambridge Un. Press, 2003.

6) W.E. Boyce and R.C. Diprima: **Elementary Differential Equations and Boundary Value Problems**, Tenth Edition, Wiley, 2012.

7) R.E. Walpole, R.H. Myers, S.L. Myers and K. Ye: **Probability & Statistics for Engineers and Scientists**, Ninth Edition, Pearson 2012 (Chapters 2 and 3).