

BA 124 – Mathematics (2)
COURSE INFORMATION

Course Title: Mathematics (2).

Code: BA124.

Contact Hours (hours/week): Lecture – 2 Hrs. Tutorial – 2 Hrs. Credit – 3.

Prerequisite: BA123 Mathematics (1)

Course Coordinator: Dr. Mohsen Salah

GRADING

Class Performance/Attendance: 10%

Midterm # 1/Assignments – (7th Week): 30%

Midterm # 2/Assignments – (12th Week): 20%

Final Exam: 40%

COURSE DESCRIPTION

Definition of indefinite integrals & table of famous integrals. Simple rules of integration & The fundamental theorem of calculus .Fundamental theorem of calculus and integration by parts .Integration by parts & integration of rational functions. Integration of rational functions. Integration of trigonometric powers. Trigonometric substitution. Integration of quad. Forms and the reduction formulas. Definite integration. Area and volume. length of curve. Average of a function & numerical integration. Matrix Algebra. Solution of systems of linear equations.

TEXT BOOKS

Smith R., Minton R., Calculus: Early Transcendental Function fourth edition, McGraw-Hill, 2007

COURSE AIM

To learn integration using different methods. To use these techniques in solving some application like to find the area, the volume, the length of a curve, and the average of a curve. To solve problems using numerical integration. To learn elementary linear algebra, solution of linear equations using matrices and determinants.

COURSE OBJECTIVES

This course addresses integration and some of its geometric applications, as well as elementary matrix algebra. It includes definitions and intuitive meanings of indefinite and definite integrals; Fundamental Theorem of Calculus; Basic techniques of integration; Integration by parts; Geometric applications; Integration of powers of trigonometric functions; Substitution; Miscellaneous and Trigonometric substitutions; Integration of rational functions in x through

partial fractions; Numerical Integration. Gauss' method for the solution of linear equations; Matrix inversion and its use in the solution of linear equations.

COURSE OUTLINE

Week Number 1: Definition of indefinite integrals and table of famous integrals.

Week Number 2: Simple rules of integration and the fundamental theorem of calculus.

Week Number 3: Fundamental theorem of calculus and integration by parts.

Week Number 4: Integration by parts and integration of rational functions.

Week Number 5: Integration of rational functions.

Week Number 6: Integration of trigonometric powers.

Week Number 7: Trigonometric substitution and 7th week exam.

Week Number 8: Integration of quadratic forms and the reduction formulas.

Week Number 9: Definite integration.

Week Number 10: Area and volume.

Week Number 11: Area, volume and length of curve

Week Number 12: Average of a function, numerical integration and 12th week exam.

Week Number 13: Matrix Algebra.

Week Number 14: Solution of systems of linear equations.

Week Number 15: General revision.

Week Number 16: Final Exam.