

Basic and Applied Science Courses (BA)

Basic and Applied Science Courses Group

BA 124 – Mathematics (2)

COURSE INFORMATION

Course Title: Mathematics (2).
 Code: BA124.
 Hours: Lecture – 2 Hrs. Tutorial – 2 Hrs. Credit –3.
 Prerequisite: BA123 Mathematics (1)

GRADING

Class Performance/Attendance: 10%
 Midterm # 1/Assignments – (7th Week): 30%
 Midterm # 2/Assignments – (12th Week): 20%
 Final Exam: 40%

COURSE DESCRIPTION

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.

TEXT BOOKS

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

Printed Notes.

REFERENCE BOOKS

Grossman S., Calculus, Harcourt Brace College Publishers, 1992.

APPENDIX A-5

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.

SPECIFIC OUTCOMES OF INSTRUCTION

- The students will develop skills in the techniques of integration, and enables them to grasp its intuitive meaning.
- The students will be provided with essential knowledge and skills in matrix algebra.

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.

APPENDIX A-6

COURSE COORDINATOR AND DEMAND

Course Coordinator: Dr.Mohsen Salah.

Course Demand: *Required*