Mutah University

Department of Mathematics & Statistics

Course: Computational Methods Instructor:Dr.Adel Al-Rabatah

Course Number:Math 425 E-mail: rabtah@mutah.edu.jo

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SCHEDULE

Week 1: Introduction to Matlab.

Week 2, 3: Setting up vectors, Format Commands.

Weeks 3 – 5: Programming Techniques: evaluating, plotting, displaying outputs, graphs and tables.

Week6: Random Processes. Designing Functions.

Week7: Polynomial Interpolation; The Vandermonde Approach.

Week8: Piecewise Polynomial interpolation.

Week9: Numerical Integration.

Week 10,11: Matrix Computations:Setting up matrix problems, Matrix Operations, Errors and Norms.

Week12, 13: Linear Systems: Triangular problems, banded problems, full problems, Gaussian Elimination, Stability.

Week 14: The Least Squares Fitting.

Week 15: The QR Factorization.

Week 16: Nonlinear Equations: Minimizing a function of single variable; Golden Section Search.

References:

1. Enginineering and Scientific Computation Using MatLab. Sergey E. Lysbevski.
2. Instructor Notes.

REMARKS:

First Exam: 15%

Second Exam: 15%

Programming Assignments: 20%

Final Exam: 50%

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Total: 100%

Note: The instructor reserves the right to give unannounced quizzes, homework, and projects for credit as part of the first and second exams.