

رمز المادة	نوع المادة	الساعات الأسبوعية			السنة الدراسية	اسم المادة
	مساعدة	الوحدات	ع	ن	الثالثة	تطبيقات الحاسوب Computer Applications
		٤	٢	١	٣٠ أسبوع	

Week	Syllabus
1 st	Environment of MATLAB
2 nd	Arithmetic Expressions Mathematical functions, Logical Operators, Relational Operators.
3 rd	Vectors and Matrices : Matrix operations , transpose and inverse of Matrix
4 th , 5 th	Working with polynomials (manipulating polynomials, derivatives roots, eigen values).
6 th , 7 th	Solve System of Linear Equations by Gauss Elimination Method
8 th , 9 th , 10 th	M-file Create in an M-file, function calling in MATLAB Programming with MATLAB, Use of Built-in Functions, Input Output, Structured Programming, Nesting and Indentation
11 th	Dealing with Errors and Pitfalls . Syntax Errors. Incompatible vector sizes. Name hiding. Logic and Rounding Error.
12 th , 13 th	Graphic plot Graphics two-dimensions plots, Log-log and semi-log plots, Histograms plots. Linear Regression, Curve fitting
14 th 15 th , 16 th	Conditions and loops statements Functions: if, else, else if, while, for, switch, break Loop function: for-next ,do-while...end
17 th , 18 th 19 th , 20 th 21 th , 22 th , 23 th , 24 th 25 th , 26 th	Applications : One and two dimensions Interpolation by algebraic polynomials Roots Finding of Nonlinear Equations (Bisection and Newton Raphson method.) Numerical Integration by Trapezoidal Rule and Simpson's Rule Ordinary differential equations (Numerical Solutions using Modified Euler and Runge Kutta Methods) Calculate the Laplace Transform and inverse Laplace Transform
27 th , 28 th 29 th , 30 th	Optimization Toolbox What Is the Optimization Toolbox? Unconstrained and constrained Optimization. Multi-objective Optimization. Large-Scale Algorithms.