Date:	Examination No.:	Version:2023-2024	Start:7/1/2024
Module Name - Code	Numerical Analysis and Probability 5164		
Module Language:	English		
Responsible:	Kanar Shukr Muhamad		
Lecture (s):	Kanar Shukr Muhamad		
College:	College of Engineering – Salahaddin University-Erbil		
Duration:	15 week – 1 semester		
Course outcomes:	Upon completion of this course, students will be able to solve engineering problems using scientific programming techniques (algorithm development and implementation). Specific problems that students are expected to formulate and solve include: - Root finding; solutions for nonlinear algebraic equations - Solving sets of linear equations - Interpolation and curve fitting models - Numerical Differentiation and Integration - Numerical solution of ordinary differential equations - Engineering applications (optimization, etc.)		
Course Content:	- Lect1(Introduction and Error Analysis) - Lect2(Significant Figures and Rounding Significant Digits) - Lect3(Significant Figure Mixed Operations and Error Propagations) - Lect4(Equations, Solution of Equations, Newton Raphson Method) - Lect5(Steffensen Method, Budan Theorem and Bisection Method) - Lect6(Solution of linear simultaneous, Graphical Method) - Lect7(Gauss – Jacobi Iteration Method and Gauss–Seidel Method) - Lect8(Interpolation and Least Square Regression) - Lect9(Numerical Integration and Numerical Differentiation) - Lect10(Newton's interpolating polynomials) - Lect11(Lagrange Method and Least polynomial Interpolation) - Lect12(Spline Interpolation Method) - Lect13(Secant Method) - Lect14 (Review)		

Literature:	The following references are recommended: ➢ D. Faires and R. Burden, Numerical methods, any edition, ➢ Gilat, A., and Subramaniam, V., Numerical Methods for Engineers and Scientists: An Introduction with Applications Using MATLAB, any edition, , ISBN 978-0-471- 73440-6. ➢ Chapra, S.C., Canale, R.P.: Numerical Methods for Engineers. any Edition., New York ➢ Loftus, J., Loftus, E.: Essence of Statistics. Second Edition, Alfred A. Knopf, New York ➢ Matlab Software
Type of Teaching:	4 hrs. in lectures (2 hrs. theory, 2 hrs. practical)
Pre-requisites:	
Preparation Modules:	
Frequency:	Spring Semester
Requirements for credit points:	For the award of credit points, it is necessary to pass the module exam. It contains: Quizzes, normal Exams, Activities, Assignments and Final examination. Student's attendance is required in all classes.
Credit point:	5
Grade Distribution:	The following grade system is used for the evaluation of the module exam: The module exam is based on the summation of two categories of evaluations: First: (50%) of the mark is based on the academic semester. Second: (50%) of the mark is based on final examination that is comprehensive for the whole of the study materials reviewed during the academic semester.
Work load:	The workload is 150 hrs. It is the result of 60 hrs. attendance and 90 hrs. self-studies (Assignments, preparation for exam and applications).