Ministry of Higher Education and Scientific Research

Mustansiriyah University /College of Science

Department of .....

(الخطة الدراسية للمساق)

Course Plan

Course No.: 54453144 **Time Division:** 3 hr Theoretical and 2 hr Practical

Course Name: Numerical Analysis_1_Lab **Semester & Year:** First, 2022 / 2023

Course Website:

Course Description:

The primary objective of the course is to develop the basic understanding of numerical algorith and skill to implement algorithms to solve mathematical problem on computer. Introductio numerical methods with emphasis on algorithm construction, analysis and implementat solutions of equations in one variable, polynomial approximation, direct solves for linear syst indirect solves for linear systems

Course Intended Outcomes:

The aim of this course is to learn the students the concept and importance of applied mathemati to solve a number of numerical problems using MATLAB languages.

Course Outline:

Week	Description depends on the Timing table (Theoretical & Practical)
1	Absolute & Relative error
2	Non-linear Equation, Locating Root, Bisection Method
3	Fixed-point Iteration Method, Fixed-point Theorem
4	Newton-Raphson Iteration Method, Secant Method
5	False-Position Method
6	Linear system, Direct Method, Matrices, Frist Exam
7	Gauss elimination method, Indirect Method
8	Ganss Jacobi Iterative Method
9	Gauss-Seidel Method, Second Exam
10	Lagrange Interpolation Polynomials
11	Divided Difference
12	Newton interpolation formulae, Third Exam
13	Newton's Forward Difference Interpolation polynomials
14	Newton's Backward Difference Interpolation polynomials
15	Four Exam

Textbooks:

[1]: A textbook of ordinary differential equations, by Shair A. and Antonio A., 2nd edition, 2015, Springer .

[2]: A First course of Ordinary Differential Equations by F. Brauer and J. A. Nohel, 2nd edition 1973 by W.A. Benjamin

Suggested references:

[1]: The Qualitative Theory of ordinary Diff. equations by Fred Brauer and J.A. Nohel

[2]: Ordinary differential equations by George F. Simmons

[3] Any Reference titling by "The Theory of Differential Equations"

Marking:

First Semester				Final Exam
1st exam	2nd exam	Practical	Activity	
10	10	5	5	30

Assignment/ Project	Description	Due Date	Marking
Home work	Some important exercises	14-11-2022	5
Home work	Some important exercises	15-12-2022	5

Instructor(s) information [معلومات الأستاذ]

Section: (Mathematics) ; Lecture Room:| A203 |, ; Office No.: (11)

Instructor's Name: Dr. Lamyaa Hussein Ali

E-Mail: *lamya_h2@yahoo.com*

Office Hours : Sun.:| 09 :20 – 10 :10 |
Wed.:| 11 : 00 – 11 :50 |

NOTES:

-Office Hour:Other office hours are available by appointment.

-The content of this syllabus not be changed during the current semester.

Lecturer Signature

أ.م. د. لمياء حسين علي

Chairman Signature