

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Republic of Iraq

The Ministry Of Higher Education  
& Scientific Research



University: Baghdad University  
College: College of Science for women  
Department: Computer Dept.  
Stage: Second Stage/ First Semester  
Lecturer name: Dr. Auras Khalid

Qualification: Ph.D in Mathematics &  
Computer Applications

Place of work: College of Science for  
women/ Computer Dept.

## Syllabus Form

Instructor Name	Dr.Auras Khalid				
E-mail	oras_hameed@yahoo.com				
Course Title	Numerical Analysis				
Course Coordinator	111CS203				
Course Objectives	It aims to study the basic concepts of the numerical methods and how to solve the equations and system of equations with them and compare the results as well as programming them using Matlab language.				
Course Description	1- Identify how to calculate the approximated solutions 2- Identify and recognize the best numerical solution and counting the approximated error 3- Using finite difference operators 4- Solve the integral equations numerically 5- Solve the system of equations numerically 6- Solve the differential equations numerically				
Textbook	Numerical analysis , Richard L. Burden, J.Douglas Faires, 2011				
References					
Course Assessments	Term Tests	Laboratory	Quizzes	Project	Final Exam
	20%	15%	5%	-	60%
General Notes					

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## Course Weekly Outline

Week	Date	Topes Covered	Lab. Experiment Assignments	Notes
1		Introduction to numerical solution and counting errors	Rules of Matlab	
2		Numerical solution of ordinary functions	Programming the method	
3		Bisection numerical method and its program	Programming the method	
4		False position numerical method and its program	Programming the method	
5		Newton Raphson numerical method and its program	Programming the method	
6		Fixed point iterative numerical method and its program	Programming the method	
7		Numerical Solution of system of equations such as: Gaussian elimination method Gauss Jordan method	Programming the method	
8		Numerical Solution of iterative methods: Gauss Seidel and Jacobi and triangular factorization	Programming the method	
9		First exam		

10		Forward Finite difference operators and its numerical solution	Programming the method	
11		Central and backward Finite difference operators and its numerical solution	Programming the method	
12		Lagrange numerical method and division method	Programming the method	
13		Trapezoidal method, 1/3 Simpson's rule, 3/8 Simpson's rule	Programming the method	
14		Solution of ordinary differential equations: Taylor, Runge-kutta, Euler, modified Euler	Programming the method	
15		Solution of ordinary differential equations: Taylor, Runge-kutta, Euler, modified Euler	Programming the method	
16		Final and second exam		

**Instructor Signature:**

**Dean Signature:**