Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department

Academic Program and Course Description Guide

2025-2026

Introduction:

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023

regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

Program Objectives: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum Structure: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program

Academic program description form

University name: University of Diyala

College/Institute: College of Administration and Economics

Scientific Department: Department of statistics

Name of the academic or professional program: Bachelor of Economics

Name of final degree: Bachelor of Economics

Academic system: first and second semester of the 2025-2026 academic year

Description preparation date: 21/9/2025

Date of filling the file: 21 /9 / 2025

Signature: Signature:

Name of department head: Name of scientific assistant:

Asst prof . Dr Sami Abdullah Abdul prof . Dr ALYAA HUSSIN KHALAF

Date: 21/9/2025 Date: 21/9/2025

Check the file before

Division of Quality Assurance and University Performance

Signature:

Name of the Director of the Quality Assurance and University Performance Division:

Assistant Teacher Amal Hadi Rashid

the date: 21/9/2025

Authentication of the Dean

Assist. Prof.Dr Nazar M. Abdulkareem

21/9/2025

.1Program vision

The department works to harmonize education and training to raise the scientific and technical efficiency of its members, taking into account the nature of reality and future aspirations to ensure high quality and academic accreditation to contribute to improving education and learning at various stages of education.

.2Program message

The department is committed to a scientific methodology and institutional work within clear plans to achieve lofty goals in the academic and training fields in accordance with the requirements of quality assurance and academic accreditation, so that its outputs in the subject of statistics become more competitive and ambitious by providing science, knowledge and skills.

.3Program objectives

The department works to provide facilities to ensure continuous improvement of the quality of educational performance at various educational levels to provide distinguished education within a comprehensive framework for achieving academic quality that combines internal and external education.

.4Program accreditation

In the stages of obtaining academic accreditation .

.5Other external indicators

noexternal influences.

DoThere is a sponsor for the program according to the standards of the Association of Arab Universities..

.6 Structure The program				
Commence	Percentage	Study unit	numberCourses	structureThe program
	144.01%	16	8	requirements The institution
	8.8%	9	5	requirements Quantity
	77.19%	118	44	requirements foot
He is trainingStudent (30) inOne of the official government departments				Training Summer
				Other

* Notes may include whether the course is core or elective..

7-Program Description				
watches Accredited		nameCourse	code The decision or The course	Year/Level
practical	Theoretical			
	3	countathlete1		year Third
	3	analysis decline1		
1	2	Programming sin		
1	2	Analysis Numerical1		
	2	countd e m o g r a p h i c 1		
	2	vital procedure1		
2	1	SPSS1		
	3	Mathematical statistics 2		
	3	analysisdecline 2		
1	2	Operations Research		
1	2	DownloadNumerical2		
1	2	Eraademographic2		
	2	vital procedure2		
2	1	SPSS 2		
	3	inference1		Fourth year
	3	DesignAnd analysis of experiences1		

	3	Measurement The economist1		
1	2	analysis chains Temporal1		
2	1	Applications and analysis Statistics 2		
	3	Multivariate Analysis 2		
	2	From him Searching		
	3	inference 2		
	3	Design and Analysisexperiments2		
	3	Measurement The economist2		
1	2	analysis chains Temporal 2		
2	1	Applications and analysis Statistics2		
	2	analysisMultipleVariables 2		
	1	projectGraduation research		

.8 Outputs learning Expected program

Knowledge	
Learning Outcomes Statement 1 - Use And applicationStatistical concepts in case studies	Learning outcomes 1 - Familiarity with the principles and concepts of statistics
Skills	
Learning Outcomes Statement2 - collection and analysis Data around Topics Statistics .	Learning outcomes 2 -Ability to understand statistical methods and how to apply them.
Learning Outcomes Statement3 - to choose Roads Statistics in dealing with realistic problems .	Learning outcomes3 -Making comparisons and statistical differences for various topics .
Values	
Learning Outcomes Statement4 - ability To understand and distinguish between statistical analyses	Learning outcomes4 Preparing concepts for various topics
Learning Outcomes Statement5 -The ability to examine and evaluate realistic and presented topics	Learning outcomes 5 -The ability to understand and analyze the problems of the topics presented and choose

	the best method between them.

.9Teaching and learning strategies

-1 Explaining the scientific material to students in detail

-2Student participation in solving mathematical and statistical problems

.-3Discussion and dialogue about the curriculum content.

-4Using statistical programs to process many topics.

-5 Brainstorming method.

.10Evaluation methods

-1 Topical questions : It includes the next :-

Questionsmultiple choice

True or false questions

- Questions The interview

-2Self-assessment and peer assessment

-3Daily tests and

assignments

4Various tests:

- I disappeared Constructive achievement accompanying

the teaching plans.

-Final achievement tests include::

-1Monthly final exams at the end of each academic

.11 The Authority The teacher						
MembersFaculty						
numbersFaculty		**Requirements.Special skills (if any)**		**Specialization**		**Academic rank**
Lecturer	**Angel**			**private**	**general**	
Nothing	**1**					**Mr.**
	6				**general**	**Mr.assistant**
	3				**general**	**teacher**
	5				**general**	**teacherassistant**

DevelopmentProfessional

directing Members body teaching New ones

Briefly classifies the scientific methods used to orient new, visiting, full-time, and part-time faculty members at the institutional and departmental levels..

-This is done through holding periodic meetings and meetings..

Professional development for faculty members

Briefly describes the plan and arrangements for academic and professional development of faculty members such as teaching and learning strategies, assessment of learning outcomes, professional development, etc.

(2.1) Acceptance criteria

(Establishing regulations related to admission to the college or institute, whether central admissionAAnd another mention)

Determine a special admission rate for all graduates of preparatory studies, both scientific and literary branches.

(3.1) The most important sources of information about the program

to rememberIn brief.

Corresponding departments in prestigious colleges

.14Program Development Plan

-Shift to the Bologna Process

a planMaha Art Program															
Required learning outcomes of the program															
Valu es				Skills				Knowle dge				essentialOr my choice	name The decision	code The decision	The year / Level
4c	3C	2C	1c	4b	3b	2b	1b	4A	3A	2A	1A				
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Essential	count athlete1		Third
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	essential	count athlete2		
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	essential	inference1		Fourth
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	essential	inference2		

- Please tick the boxes corresponding to the individual learning outcomes of the programme being assessed.

Statistics Department

The Third stage

Semester one

2026– 2025

Course Description Form

1. Course name
Demographic Statistics 1
2. Course code
33106Dem1
3. Semester/Year
First Semester / Third Stage / 2025-2026
4. Date of preparation of this description
21/9/2025
5. Available forms of attendance
My presence
6. Number of study hours (total) Number of units (total)
3/3
7. Name of the course administrator (if We wish you more than one name is mentioned)
Name: Wahab Salem Mohammed Email: Wahabsta@uodiyala.edu.iq
8. Course objectives
Course objectives
• Educational benefit, by getting to know the conceptDemographic statistics And the concepts associated with it. • Ways toStatistics Demographic • Learn about the importance and types of applicationsstatistical In the demographic field
9. Teaching and learning strategies

• Know the studentBasic concepts of demographic statistics Subject-specific skills ApplicationsDemographic statisticsIn realityMy statistics	Strategy

10. Course structure					
Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
Homework + daily exam	Giving focused lectures with practical examples	Definitions and concepts	Some basic concepts of demographic analysis	3	1
Homework	Giving focused lectures with practical	a lecture	Nature of demographic information	3	2

	examples				
Homework + Daily Exam	Mathematical examples	Understanding Relationships	Methods with data	3	3
Homework	Mathematical examples	Key concepts	Data and information available from United Nations offices	3	4
Homework	Mathematical examples	Theoretical steps	population growth rates	3	5
Homework	Mathematical examples	Real-life applications	fertility rates	3	6
Homework	Mathematical examples	Real-life applications	Segmental mortality rates	3	7
Homework	Mathematical examples	Key concepts	Life expectancy	3	8
Homework	Mathematical examples	monthly test	First exam	3	9
Homework	Mathematical examples	Key concepts	Life tables	3	10
Homework	Mathematical examples	Understanding Relationships	Fertility measures	3	11
Homework	Mathematical examples	Key concepts	gender ratio	3	12
Homework	Mathematical examples	Understanding Relationships	Other concepts about population	3	13
Homework	Mathematical examples	Key concepts	Life tables	3	14
			Final semester exam	3	15

11. Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily, oral, and monthly preparation, written exams, reports, etc..

- 60Grade for the final written exam,
- 40 (2 points related to striving, divided into:
- 5 attendance marks.
- 15 marks for the written examAt a rate of two exams per month.
- 5 marks for the oral exam

12. Learning and teaching resources

Population census Dr. Abdul Hussein Zini	Required textbooks (methodology if available)
	Main references (sources)
	Recommended supporting books and

	references (scientific journals, reportsR....)
(Ministry of Planning - Central Statistical Agency - Annual Report)	Electronic referencesAndInternet sites

Course Description Form

1.Course name	
Linear programming	
2. codeThe decision	
ORI33103	
3. the chapter /year	
First semester/third stage/2025-2026	
4. Date preparedDescription	
21/9/2025	
5. AAvailable attendance forms	
My presence	
6.Number of study hours (total) / Number of units (total)	
3/3	
7.Course Instructor Name(If more than one name is mentioned)	
Name: Karim Qasim Muhammad Email: kareem@uodiyala.edu.iq	
8.Course objectives	
Course objectives • Introducing the student to the most important foundations and principles of linear programming • Explaining the concept of programming mathematical problems • Highlighting the importance of mathematical concepts and solution methods • This course aims to develop the ability to build models and write computer programs.	Course objectives Academic
9. Teaching and learning strategies	
Course outcomes, teaching, learning and assessment methods • Cognitive objectives:- Making the student able to • To know the most important principles and basic concepts in mathematical programming. • To identify the types of functions and relationships on functions. • To learn programming tools and make the best decisions • To express his opinion on the concepts of mathematics and programming • To apply mathematical concepts with real-life examples and case studies. Course skill objectives • - Interactive skills: having the ability to communicate with the subject teacher and colleagues • - Diagnostic skills: the ability to build programs and their real-world applications. • Scientific reports.	Strategy

Teaching and learning methods

- Managing the lecture in a practical manner related to the reality of daily life to attract the student to the subject of the lesson without straying from the core of the subject so that the material is flexible and capable of being understood and analyzed.
- Discussion and dialogue
- Enrichment questions
- Direct interrogation

Evaluation methods

- Clarification questions
- True or false questions
- Duties
- Self-assessment
- Tests (daily, monthly, semester, final)).

Emotional and value goals

- Simple thinking: (analyzing the problem in a logical, mathematical way and finding solutions based on the expected results)
- Critical thinking: (the ability to criticize and distinguish between the topics presented and choose between them)
- Creative thinking: (the ability to produce new ideas and methods of solution).

Teaching and learning methods

- Brainstorming method
- Use decision making to test the best alternative.
- Presentation.

Evaluation methods

- Various tests (daily, monthly, semester, final)
- Oral tests
- Duties

General and transferable skills (other skills related to employability and personal development).

- Skills in collecting and analyzing information about mathematical concepts and how to use them in the fields of statistics and computers.
- Training and personal development skills on how to apply programming mathematics concepts in various fields.
- Developing the student's ability to deal with the Internet.

10. Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Watches	Week
Discussion, oral and	My presence	Introduction to OR	Students must be Able to understand so	3	the first

written examinatio and practica application			concepts BasicIn programming mathematics, operatio research, programmin and computersGive examples		
Discussion, oral and written examinatio and practica application	My presence	Introduction to linear programming	Learn about lin mathematical mod linear programming, operations research.	3	the second
Discussion, oral and written examinatio and practica application	My presence	Method of solving linear programming	Methods for solv linear programs	3	the third
Discussion, oral and written examinatio and practica application	My presence	Graphical method	Drawing method as a method for solving linear programs	3	Fourth
Discussion, oral and written examinatio and practica application	My presence	Simplex method	Optimal solution meth using simplex	3	Fifth
Discussion, oral and written examinatio and practica application	My presence	First exam	First test and evaluati	3	Sixth
Discussion, oral and written examinatio and practica application	My presence	Dual model	Duality and the oppos model	3	Seventh
Discussion and written test and practica application	My presence	Primal and Dual model	The relations between the prototy and the binary	3	The eighth

Discussion, oral and written examinatio and practica application	My presence	Dual simplex	Opposite simplex and usefulness in solving	3	Ninth
Discussion, oral and written examinatio and practica application	My presence	Sensitivity Analysis	The concept sensitivity analysis the changes that occu	3	Tenth
Discussion, oral and written examinatio and practica application	My presence	Second exam	Second test evaluation	3	Eleventh
Discussion, oral and written examinatio and practica application	My presence	Transportation models	Concept of transp models and solut methods	3	Twelfth
Discussion, oral and written examinatio and practica application	My presence	Assignment problems	The concept of allocation problem methods of solution	3	Thirteenth
Discussion, oral and written examinatio and practica application	My presence	Network analysis	Business Ch Analysis Benefits of method in analyz projects	3	fourteenth
Discussion and written test and practica application	My presence	Game theory.	The concept competition and theory of profit and lo	3	Fifteenth

11. Course Evaluation
The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc. • 60 marks written final exam. • 40 degrees of special endeavor divided into: • 5 attendance marks. • 5-10 marks homework with. • 15 marks written exam. • 5 marks oral exam.

12. Learning and teaching resources	
Introduction to Operations Research	Required textbooks (methodology if any)
Gupta. Er. Prem Kumar, 2019 "Proplems in operations Research Principles and Solutions" Tribunals and Forums of New Delhi. India, ISBN: 978-81-219-0968-6.	Main references (sources)
	Recommended supporting books and references (scientific journals, reports...)
Internet	Electronic references, websites

Course Description Form

1─Course name
Linear Regression Analysis 1
2─codeThe decision
33102Sim─Reg
3─the chapter /year
First semester/fourth stage/2025-2026
4─Date preparedDescription
21/9/2025
5─AAvailable attendance forms
My presence
6─Number of study hours (total) / Number of units (total)
3/3
7─Course Instructor Name(If more than one name is mentioned)
Name: Aqil Hamid Farhan Email:aqeelsta@uodiyala.edu.iq
8─Course objectives

Course objectives	Course objectives Academic
• Introducing the student to the theoretical foundations of the subject as well as its practical application. • It aims to build a modeldeclineRealistic based onPractical reality • Features that must be available in order to get the bestLinear regression modelSimulates practical realityFor studies • studied • Building analytical skillsdeclineHow to get an analysis of the phenomenon studied through • Knowing the factor affecting it.	

9 ─Teaching and learning strategies	
Course outcomes, teaching, learning and assessment methods Make the student able to: • Understanding the basicsLinear regression analysis • to understandSimple linear regression model • to understandBasics of using a regression model • to understandAssumptions of the regression model • Understanding the stages of building a regression model • Understanding the assumptions of the random error term • to understandModel parameter estimation processes • to understandOrdinary least squares method • to understandModel parameter testing methods • Course skill objectives • Interactive skills: the ability to communicate with the subject teacher and colleagues. • Diagnostic skills: the ability to deal with the statistical problem. • Analytical skills: the ability to analyze and distinguish between different types of orders.AnalyticalIn the program.	Strategy

- Teaching and learning methods
- 1-Presenting basic theories, meaning that learning will begin with presenting basic theories and concepts.to decline
- Analysis declineAnd representedBy modelSimple, by buildingModel of the phenomenon studied.
- Use of studiesEconomicPractical applications and experiments in various fields, such as:
- Agricultural sciences and medical sciences, for the purpose of explaining how to useRegression modelIn practical life.
- Providing individual guidance to students to understand theories and practical exercises, and guiding them in solving problems and understanding results.
- Organizing group discussions aboutRegression model building processes, which contributes to the exchange of ideas and mutual learning among students.
- Previous studies can be used as examples to analyze and understand the results and statistical analyses used inSimple linear regression model
- Providing continuous assessment of students' performance and providing feedback to guide them and improve their understanding and skills in analysis.

simple linear regression

Evaluation methods

- Clarification questions
- True or false questions
- Duties
- Self-assessment
- Tests (daily, monthly, semester, final)).

Emotional and value goals

- The ability to examine and evaluate the topics raised.
- The ability to criticize, distinguish and choose between the topics presented.
- The ability to produce new ideas

Teaching and learning methods

- Brainstorming method
- Use decision making to test the best alternative.
- Presentation.

Evaluation methods

- Various tests (daily, monthly, semester, final)
- Oral tests
- Duties

General and transferable skills (other skills related to employability and personal development).

- Skills in collecting and analyzing information about the concepts of designing and analyzing experiments and how to use them in agricultural fields.
- Training and personal development skills on how to apply experimental design concepts in various fields.
- Developing the student's ability to build a correct experiment.

10–Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	Week
Discussion, oral and written examinatior	My presence		The concept of linea regression	3	the first
Discussion, oral and written examinatior	My presence		Types of regression models	3	the second
Discussion, oral and written examinatior	My presence		Uses of regression	3	the third
Discussion, oral and written examinatior	My presence		Simple linear regressio model	3	Fourth
Discussion, oral and written examinatior	My presence		Methods for estimating parameters of a simple linear regression model	3	Fifth
Discussion, oral and written examinatior	My presence		Statistical inference for simple linear regression models	3	Sixth
Discussion, oral and written examinatior	My presence		Significance tests for ability parameters	3	Seventh
Discussion, oral and written examinatior	My presence		Confidence limits for estimated parameters	3	The eighth
Discussion, oral and written examinatior	My presence		Estimating error variance	3	Ninth
Discussion, oral and written examinatior	My presence		Estimate by period	3	Tenth
Discussion, oral and written examinatior	My presence		Predicting a period	3	Eleventh
Discussion, oral and written examinatior	My presence		Analysis of variance table	3	Twelfth
Discussion,	My presence		Nonlinear models	3	Thirteenth

oral and written examinatior					
Discussion, oral and written examinatior	My presence		Methods for estimating models for simple nonlinearity	3	Fourteenth
Discussion, oral and written examinatior	My presence		Second semester exam	3	Fifteenth

11─Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

- 60 marks written final exam.
- 40 degrees of special endeavor divided into:
- 5 attendance marks.
- 5 marks homework with.
- 15 marks first written exam
- 15 marks for the second written exam

12─Learning and teaching resources

Regression analysis Prof. Dr. Khashe' Al-Rawi	Required textbooks (methodology if any)
	Main references (sources)
	Recommended supporting books and references (scientific journals, reports...)
Nothing	Electronic references, websites

Course Description Form

1─Course name
Vital Statistics 1
2─codeThe decision
BioI33105
3─the chapter /year
First Semester/Third Stage/2025-2026
4─Date preparedDescription
21/9/2025
5─AAvailable attendance forms
My presence
6─Number of study hours (total) / Number of units (total)
2/2
7─Course Instructor Name(If more than one name is mentioned)
Name: gheadaa I brahim sheab Emai: gh.gheadaa@uodiyala.edu.iq
8─Course objectives

Course objectives • Application to actual data/Assign students to read the topic in advance from several academic sources related to the course and lecture. • After teaching the subject, the researcher will be able to assist researchers in various scientific applications. • Being able to analyze data and draw conclusions that lead to sound decision making • Students prepare brief reports on some of the course topics and discuss them in the lecture. • Practical exercises on how to measure the levels of (theme) according to the available data and how to interpret the results • How to use statistical software such asSPSS, MINTAB, SAS The student graduates with knowledge of this important applied material in all research fields.	Course objectives
9─ Teaching and learning strategies	
knowledge and understanding • Ability to analyze data using statistical programs. • Providing students with applied statistical knowledge in various areas of life, such as social, economic, and others. • The ability to familiarize the student with statistical tests and interest in studying cases in the health and agricultural fields and providing data for application and extracting results. • The student's understanding of the concept of analysis and benefiting from it in his future practical life. • Subject-specific skills • Employment skills using appropriate statistical analysis of data. Through the theoretical aspect on real data. • Skills to reach future decisions and make appropriate decisions based foundations	Strategy

- scientifically sound

Teaching and learning methods

- Giving lectures and providing continuous and practical exercises on vari phenomena such as economic and demographic.
- And others to know the use of statistics in various fields
- Organize group discussions aboutAnalyze a specific time series, wh contributes to the exchange of ideas and mutual learning among students

Evaluation methods

Periodic exams and discussions on the lecture topic

thinking skills

- Think and listen to the question.
- Understand the question.
- Focus on the requirements of the question.
- Accurate and scientific answer to the requirements of the question

10─Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	Week
Discussion, oral a written examinati	y presence	Metrics and data in the biosphere	Metrics and data in the biosphere	2	the first
Discussion, oral a written examinati	y presence	Rates and measures	Rates and measures	2	the second
Discussion, oral a written examinati	y presence	Event, probability, and conditional probability	Event, probability, and conditional probability	2	the third
Discussion, oral a written examinati	y presence	Some important discrete distributions in the biological field (binomial and Poisson)	Some important discrete distributions in the biological field (binomial and Poisson)	2	Fourth
Discussion, oral a written examinati and practical application	y presence	Some important continuous distributions in the biological domain (exponential, normal, and chi-square,F T,)	Some important continuous distributions in the biological domain (exponential, normal, and chi-square,F T,)	2	Fifth
Discussion, oral a written examinati	y presence		Examthe first	2	Sixth
Discussion, oral a written examinati	y presence	Vital applications of probability	Vital applications of probability distributions.	2	Seventh

		distributions.			
Discussion, oral a written examinati	y presence	Types of hypotheses and standard error.	Types of hypotheses and standard error.	2	The eighth
Discussion, oral a written examinati	y presence	Average and sample tests	Average and sample tests	2	Ninth
Discussion, oral a written examinati	y presence	Two-sample tests and one-criterion analysis of variance	Two-sample tests and one-criterion analysis of variance	2	Tenth
Discussion, oral a written examinati	y presence	Second exam	Second exam	2	Eleventh
Discussion, oral a written examinati	y presence	Two-criterion analysis of variance	Two-criterion analysis of variance	2	Twelfth
Discussion, oral a written examinati	y presence	Multiple comparisons	Multiple comparisons	2	Thirteenth
Discussion, oral a written examinati	y presence	Contrast tests	Contrast tests	2	Fourteenth
Discussion, oral a written examinati	y presence	First semester exam	Vital applications	2	Fifteenth

11─Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

- 50 marks for a final written exam and 10 marks for a final practical exam.
- 40 degrees of special endeavor divided into:
- 5 attendance marks.
- 5-10 marks for homework with a practical exam.
- 15 marks written exam.
- 5 marks oral exam.

12─Learning and teaching resources

There are no books or methodological sources.	Required textbooks (methodology any)
Computer applications using softwareSPSS Kamal Alwan Al-Mashhadani, Dr. Imad Hazem Abboudi Dr. Suhail Najm Abdullah Department of Statistics, College of Administration and Economics, University of Baghdad / 2012 Biostatistics using softwarespss Assistant Professor Dr. Jassim Mohammed Khalaf Al-Tamimi	Main references (sources)

Professor Dr. Wissam Malik Daoud	
Biostatistics A foundation for analysis in the health sciences	Recommended supporting books and references (scientific journals, reports...)
	Electronic references, websites

Course Description Form

1─Course name
Data management usingSPSS 1
2─codeThe decision
33104Ma─SpI
3─the chapter /year
First semester/third stage/2025-2026
4─Date preparedDescription
21/9/2025
5─AAvailable attendance forms
My presence
6─Number of study hours (total) / Number of units (total)
3/3
7─Course Instructor Name(If more than one name is mentioned)
Name: Laith Talib Rashid Email: laith88@uodiyala.edu.iq
8─Course objectives

Course objectives	Course objectives
• Introducing the student to the theoretical foundations of the subject as well as its practical application. • It aims to build a design model that matches reality based on experience. • And characteristics that must be available in order to obtain the best design that simulates the practical reality of phenomena. • studied • Building statistical analysis skills and how to obtain an analysis of the phenomenon studied through • Knowing the factor affecting it.	

9─ Teaching and learning strategies	
Course outcomes, teaching, learning and assessment methods Make the student able to: • Introducing the student to the most important windows in the programSPSS • Introducing the student to the importance of the programSPSS • Statement of the most important characteristics of the windowData view • Introducing the student to how to design a statistical questionnaire • Providing the student with applications on data arrangement, variable transformation, data merging, and data partitioning. • Providing students with applications on questionnaire analysis • To know the program windowsSPSS. • to knowFor the student to exploreData • To guide the student to distinguish between the types of variables in the program. • The student should know how to deal with data and how to test it according to the normal distribution. • The student should be able to explain the results of hypothesis testing for quantitative and descriptive data.	Strategy

- The student must complete homework on the homogeneity tests.
  Course skill objectives
- skillsInteractive:Have the ability to communicate with the subject teacherAnd colleagues.
- skillsDiagnostic:Ability to deal with the problemStatistics.
- skillsAnalytical:Ability to analyze and distinguish between different types of commandsAnalyticalIn the program
- Teaching and learning methods
- The lecture.
- DiscussionAnd dialogue.
- QuestionsEnrichment.
- interrogationLive.
  Evaluation methods
- True and false questions.
- Multiple choice questions.
- Clarification questions.
- Duties
- Self-assessment.
- Exams (monthly, semester, final).
  Emotional and value goals
- The ability to examine and evaluate the topics raised.
- The ability to criticize, distinguish and choose between the topics presented.
- The ability to produce new ideas
  Teaching and learning methods
- Brainstorming method
- Use decision making to test the best alternative.
- Presentation.
  Evaluation methods
- Various tests (daily, monthly, semester, final)
  - Oral tests
  - Duties

General and transferable skills (other skills related to employability and personal development).

- Skills to distinguish between types of variables.
- Training skills to conduct various statistical tests.
- Questionnaire preparation skills.

10─Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	Week
Discussion, oral and written examination	My presence		Data types, program window typesSPSS	3	the first
Discussion, oral and written examination	My presence		The most important characteristics of NafidahData view, data entry	3	the second
Discussion, oral and written examination	My presence		Names and descriptions of variables in a sheetVariable view,	3	the third

			creating subtotals of variables, designing statistical questionnaires		
Discussion, ora and written examination	My presence		Data arrangement, variable transformation, data merging, data partitioning	3	Fourth
Discussion, ora and written examination	My presence		Collect data, select a portion of data, weight data, add a date to data	3	Fifth
Discussion, ora and written examination	My presence		Data conversion, data counting, data encoding	3	Sixth
Discussion, ora and written examination	My presence		Variable tab, auto-coding	3	Seventh
Discussion, ora and written examination	My presence		Rank cases and their types estimation of missing values	3	The eighth
Discussion, ora and written examination	My presence		Data exploration, chartstem and leaf, boxplot	3	Ninth
Discussion, ora and written examination	My presence		iterative scheme, chartNormal QQ Plot	3	Tenth
Discussion, ora and written examination	My presence		a planDetrended Normal QQ Plot, Confidence Interval Formation	3	Eleventh
Discussion, ora and written examination	My presence		Trimmed mean, quartiles and percentiles	3	Twelfth
Discussion, ora and written examination	My presence		Normal distribution test by skewness coefficient ratio, homogeneity of variance test	3	Thirteenth
Discussion, ora and written examination	My presence		Testing homogeneity of variance using a plotSpread vs. Levene test, dealing with missing values	3	fourteenth
Discussion, ora and written examination	My presence		First semester exam	3	fifteenth

11─Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

- 60 marks written final exam.
- 40 degrees of special endeavor divided into:
- 5 attendance marks.
- 5 marks homework with.
- 15 marks first written exam

• 15 marks for the second written exam	
12–Learning and teaching resources	
	Required textbooks (methodology if any)
Statistical program analysisSPSS Composition Dr. Ihab Abdel Salam Your guide to the statistical programSPSS Composition Saad Zaghloul	Main references (sources)
	Recommended supporting books and references (scientific journals, reports...)
Nothing	Electronic references, websites

Course Description Form

1─Course name	
Mathematical Statistics 1	
2─codeThe decision	
MathI33101	
3─the chapter /year	
First semester/third stage/2025-2026	
4─Date preparedDescription	
21/9/2025	
5─AAvailable attendance forms	
My presence	
6─Number of study hours (total) / Number of units (total)	
3/3	
7─Course Instructor Name(If more than one name is mentioned)	
Name: Inam Abdul Rahman Numan Email: inaamsta@uodiyala.edu.iq	
8─Course objectives	
Course objectives • Introducing the student to the most important principles of mathemat statisticsAnd its importance. • What do statistical distributions mean? • What are the steps of statistical analysis based on statistics?The athlete. • What are the display methods?Data. • Developing the inference method.	Course objectives
9. Teaching and learning strategies	
Course outcomes, teaching, learning and assessment methods theCognitive objectives • The student should know the statistical information. • The student should know the most important basics of science.StatisticsThe athlete. • The student should know the most important statistical distributions. • The student should know the method of presenting and analyzing data and what are the most important statistical distributions that are appropriate. • The student should know the method of analysis and inference. Skill objectiveshCourse specific • Interactive skills/student interaction with the environment. • Personal skills / ability to diagnose statistical information and its distributions from reality. • Analytical skills / ability to analyze digital information realistically. Teaching and learning methods • Managing the lecture in a practical manner related to the reality of daily life to attract the student to the subject of the lesson without straying from the core of the subject so that the material is flexible and capable of being understood and analyzed. • Discussion and dialogue • Enrichment questions • Direct interrogation Evaluation methods	Strategy

- Clarification questions
- True or false questions
- Duties
- Self-assessment
- Tests (daily, monthly, quarterly, final)).

Emotional and value goals

- Simple thinking: (analyzing the problem in a statistical and mathematical way and finding solutions based on the expected results)
- Critical thinking: (the ability to criticize and distinguish between the topics presented and choose between them)
- Creative thinking: (the ability to produce new ideas and methods of solution).

Teaching and learning methods

- Brainstorming method
- Use decision making to test the best alternative.
- PresentationAnd.

Evaluation methods

- Various tests(Daily, monthly, quarterly, final
- Oral tests
- Duties

General and transferable skills (other skills related to employability and personal development).

- Skills in collecting and analyzing information about mathematical concepts and how to use them in the fields of statistics.
- Training and personal development skills on how to apply mathematical concepts in different fields.
- Developing the student's ability to deal with the Internet..

10─Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
Self-assessment/tests/oral/enrichment	Lecture and discussion	definition of probability	definition of probability	3	1
Self-assessment/tests/oral/enrichment	Lecture and discussion	Bernoulli, binomial, trinomial	Bernoulli, binomial, trinomial	3	2
Self-assessment/tests/oral/enrichment	Lecture and discussion	Geometric	Geometric	3	3
Self-assessment/tests/oral/enrichment	Lecture and discussion	Gamma, exponential	Gamma, exponential	3	4
Self-assessment/tests/oral	Lecture and discussion	Normal distribution	Normal distribution	3	5

Self-assessment/tests/oral	Lecture and discussion	Pareto distribution	Pareto distribution	3	6
Self-assessment/tests/oral	Lecture and discussion	Weibull distribution	Weibull distribution	3	7
Self-assessment/tests/oral	Lecture and discussion/exam	Joint prob. distribution	Joint prob. Distribution	3	8
Self-assessment/tests/oral	Lecture and discussion	Conditional prob.	Conditional prob.	3	9
Self-assessment/tests/oral	Lecture and discussion	Some related	Some related	3	10
Self-assessment/tests/oral	Lecture and discussion	Marginal pdf order statistics	Marginal pdf order statistics	3	11
Self-assessment/tests/oral	Lecture and discussion	Joint pdf order statistics	Joint pdf order statistics	3	12
Self-assessment/tests/oral	Lecture and discussion	Sample median	Sample median	3	13
Self-assessment/tests/oral	Lecture and discussion	Sample range And mgf	Sample range And mgf	3	14
Self-assessment/tests/oral	clarification Questions	Exam	Exam	3	15

11─Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

- 60 marks written final exam.
- 40 degrees of special endeavor divided into:
- 5 attendance marks.
- 5-10 marks homework with.
- 15 marks written exam.
- 5 marks oral exam.

12─Learning and teaching resources

Introduction to mathematical statistics /dr. iden hassan, dr. hamza Ismael	Required textbooks (methodology if any)
Introduction to mathematical statistics /dr. iden hassan, dr. hamza Ismael	Main references (sources)
Mathematical statistics /Robert Hogg	Recommended supporting books and references (scientific journals, reports...)
Iraqi Virtual Library/External Internet Researc	Electronic references, websites

Course Description Form

1─Course name
numerical analysis1
2─codeThe decision
NumI33107
3─the chapter /year
the chapterAcademicthe first/ Third phase / 2026 -2025
4─ Date preparedDescription
21/9/2025
5─AAvailable attendance forms
My presence
6─Number of study hours (total) / Number of units (total)
3/3
7─Course Instructor Name(If more than one name is mentioned)
Name: Sami Abdullah Abdel Email:samiaabed@uodiyala.edu.iq
8─Course objectives

• Introducing the student to how to arrive at mathematical conce with approximate numerical solutions • The student learns how to deal with large numbers and how perform repetitive operations on them. For high accuracy • Introducing the student to how to apply numerical algorith with extreme precision	Course objectives

9─Teaching and learning strategies	
Course outcomes, teaching, learning and assessment methods • Cognitive objectives:- Making the student able to • - To know the most important principles and basic concepts in mathematics. • - To identify the types of functions and relationships on functions. • To know the concept of derivative and derivative laws • To express his opinion on mathematical concepts • To apply mathematical concepts with real-life examples and case studies. Course skill objectives • - Interactive skills: having the ability to communicate with the subject teacher and colleagues • -Diagnostic skills: the ability to diagnose functions and their real-world applications. • Scientific reports. Teaching and learning methods • Managing the lecture in a practical manner related to the reality of daily life to attract the student to the subject of the lesson without straying from the core of the subject so that the material is flexible and capable of being understood and analyzed. • Discussion and dialogue • Enrichment questions • Direct interrogation	Strategy

Evaluation methods

- Clarification questions
- True or false questions
- 3 Duties
- Self-assessment
- Tests (daily, monthly, semester, final)).

Emotional and value goals

- Simple thinking: (analyzing the problem in a statistical and mathematical way and finding solutions based on the expected results)
- Critical thinking: (the ability to criticize and distinguish between the topics presented and choose between them)
- Creative thinking: (the ability to produce new ideas and methods of solution).

Teaching and learning methods

- Brainstorming method
- Use decision making to test the best alternative.
- Presentation.

Evaluation methods

- Various tests (daily, monthly, semester, final)
- Oral tests
- Duties

General and transferable skills (other skills related to employability and personal development).

- Skills in collecting and analyzing information about mathematical concepts and how to use them in the fields of statistics.
- Training and personal development skills on how to apply mathematical concepts in different fields.
- Developing the student's ability to deal with the Internet..

10─Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
Exa	recitatio	Order of completion of operations The lineA - Absolute error -Relative error Rounded erro	Accuracy in dealin with Arithmetic operatic	2	1
Exa	recitatio	Sources of error -Method error -Initial error Cruciform error -The truncated error -Significant figures	Identify the types Error and its source	2	2

Exar	recitatio	rootEquations Methods for finding approximate roots -Drawing method	Understanding numerical solution	2	3
Exar	recitatio	Analysis method (deletion)	Understanding numerical solution		4
Exar	recitatio	Fixed point method	Understanding numerical solution		5
Exar	recitatio	Newton-Raphson method for finding roots	Understanding numerical solution		6
Exar	recitatio	Fake site method	Understanding numerical solution		7
Exar	recitatio	Special iterative methods	Building iterative methods		8
Exar	recitatio	serialatForces	The benefit of serie Forces		9
Exar	recitatio	partial power series Power series approximation	The benefit of serie Forces		10
Exar	recitatio	Differences Definition of the difference equation - first difference and second difference	Knowing the conce of differences And its application		11
Exar	recitatio	Front differentials	Knowing the conce of differences And its application		12
Exar	recitatio	background differences	Knowing the conce of differences And its application		13
Exar	recitatio	Central differences	Knowing the conce of differences And its application		14
Exar	recitatio	The relationship between differences	Knowing the conce of differences And its application		15

11─Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

• 60 marks written final exam. • 40 degrees of special endeavor divided into: • 5 attendance marks. • 5-10 marks homework with. • 15 marks written exam. • 5 marks oral exam.	
12─Learning and teaching resources	
Numerical Analysis Book by Dr. Fa Ahmed, Dr. Iqbal Mahmoud, Fadaa Mazhar	Required textbooks (methodology if any)
Introduction to Numerical Analy by Dr. Ahmed Al-Alusi, Adel Al-Bayati	Main references (sources)
Numerical Analysis Richard L. Burden, J. Douglas Faires	Recommended supporting books and references (scientific journals, reports...)
	Electronic references, websites

Statistics Department

The Third stage

Semester two

2026– 2025

Course Description Form

1–Course name
Data management using SPSS 2
2–codeThe decision
233212 Ma– Sp2
3–the chapter /year
Second semester/third stage/2025–2026
4–Date preparedDescription
21/9/2025
5–AAvailable attendance forms
My presence
6–Number of study hours (total) / Number of units (total)
3/3
7–Course Instructor Name(If more than one name is mentioned)
Name: Laith Talib Rashid Email: laith88@uodiyala.edu.iq
8–Course objectives

Course objectives • **Introducing the student to the theoretical foundations of the subject as well as its practical application.** • **It aims to build a design model that matches reality based on experience.** • **And characteristics that must be available in order to obtain the best design that simulates the practical reality of phenomena.** • **studied** • **Building statistical analysis skills and how to obtain an analysis of the phenomenon studied through** • **Knowing the factor affecting it.**	**Course objectives**
9 –Teaching and learning strategies	
Course outcomes, teaching, learning and assessment methods **Make the student able to:** • **Introducing the student to the most important windows in the programSPSS** • **Introducing the student to the importance of the**	**Strategy**

programSPSS

- **Statement of the most important characteristics of the windowData view**
- **Introducing the student to how to design a statistical questionnaire**
- **Providing the student with applications on data arrangement, variable transformation, data merging, and data partitioning.**
- **Providing students with applications on questionnaire analysis**
- **To know the program windowsSPSS.**
- **to knowFor the student to exploreData**
- **To guide the student to distinguish between the types of variables in the program.**
- **The student should know how to deal with data and how to test it according to the normal distribution.**
- **The student should be able to explain the results of hypothesis testing for quantitative and descriptive data.**
- **The student must complete homework on the homogeneity tests.**

Course skill objectives

- **skillsInteractive:Have the ability to communicate with the subject teacherAnd colleagues.**
- **skillsDiagnostic:Ability to deal with the problemStatistics.**
- **skillsAnalytical:Ability to analyze and distinguish between different types of commandsAnalyticalIn the program**

Teaching and learning methods

- **The lecture.**
- **DiscussionAnd dialogue.**
- **QuestionsEnrichment.**
- **interrogationLive.**

Evaluation methods

- **True and false questions.**
- **Multiple choice questions.**
- **Clarification questions.**
- **Duties**
- **Self-assessment.**
- **Exams (monthly, semester, final).**

Emotional and value goals

- **The ability to examine and evaluate the topics raised.**
- **The ability to criticize, distinguish and choose between the topics presented.**
- **The ability to produce new ideas**

- **Teaching and learning methods**

- **Brainstorming method**
- **Use decision making to test the best alternative.**
- **Presentation.**

Evaluation methods

- **Various tests (daily, monthly, semester, final)**
- **Oral tests**
- **Duties**

General and transferable skills (other skills related to employability and personal development).

- **Skills to distinguish between types of variables.**
- **Training skills to conduct various statistical tests.**
- **Questionnaire preparation skills.**

10–Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	Week
Discussion, or and written examination	My presence		Frequency tables, descriptive statistics	3	the first
Discussion, or and written examination	My presence		Intersection tables, pivot tables	3	the secon
Discussion, or and written examination	My presence		Charts, import and export data files	3	the third
Discussion, or and written examination	My presence		Average analysis, linear effect test	3	Fourth
Discussion, or and written examination	My presence		One sample t test, Independent sample t test	3	Fifth
Discussion, or and written examination	My presence		Paired sample t test, One way anova	3	Sixth
Discussion, or and written examination	My presence		Ch-square testv, kolmagorov-smirnov test	3	Seventh
Discussion, or and written examination	My presence		Binomial test, Runs test	3	The eight
Discussion, or and written examination	My presence		Two-sample independent samples testK	3	Ninth
Discussion, or	My presence		Test two related	3	Tenth

and written examination			samples from related samplesK		
Discussion, or and written examination	My presence		association, partial association	3	Eleventh
Discussion, or and written examination	My presence		Simple linear regression, multiple linear regression	3	Twelfth
Discussion, or and written examination	My presence		Methods for choosing the best model, the problem of multicollinearity	3	Thirteent
Discussion, or and written examination	My presence		Autocorrelation problem, heteroscedasticity problem	3	Fourteen
Discussion, or and written examination	My presence		Second semester exam	3	Fifteenth

11–Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

- **60 marks written final exam.**
- **40 degrees of special endeavor divided into:**
- **5 attendance marks.**
- **5 marks homework with.**
- **15 marks first written exam**
- **15 marks for the second written exam**

12–Learning and teaching resources

	Required textbooks (methodology if any)
Statistical program analysisSPSS Composition Dr. Ihab Abdel Salam Your guide to the statistical programSPSS Composition Saad Zaghloul	Main references (sources)
	Recommended supporting books and references (scientific journals, reports…)
Nothing	Electronic references, websites

Course Description Form

1–Course name
Linear Regression Analysis 2
2–codeThe decision
33210Mul–Reg
3–the chapter /year
First semester/third stage/2025–2026
4–Date preparedDescription
21/9/2025
5–AAvailable attendance forms
My presence
6–Number of study hours (total) / Number of units (total)
3/3
7–Course Instructor Name(If more than one name is mentioned)
Name: Aqil Hamid Farhan Email:aqeelsta@uodiyala.edu.iq
8–Course objectives

Course objectives	Course objectives
• Introducing the student to the theoretical foundations of the subject as well as its practical application. • It aims to build a modeldeclineRealistic based onPractical reality • Features that must be available in order to get the bestLinear regression modelSimulates practical realityFor studies • studied • Building analytical skillsdeclineHow to get an analysis of the phenomenon studied through • Knowing the factor affecting it.	

9 Teaching and learning strategies	
Course outcomes, teaching, learning and assessment methods Make the student able to: • Understanding the basicsLinear regression analysis • to understandMultiple linear regression model • to understandBasics of using a regression model • to understandAssumptions of the regression model	Strategy

- **Understanding the stages of building a regression model**
- **Understanding the assumptions of the random error term**
- **to understandModel parameter estimation processes**
- **to understandOrdinary least squares method**
- **to understandModel parameter testing methods**

Course skill objectives

- **Interactive skills: the ability to communicate with the subject teacher and colleagues.**
- **Diagnostic skills: the ability to deal with the statistical problem.**
- **Analytical skills: The ability to analyze and distinguish between different types of analytical commands in the program.**

Teaching and learning methods

- **Presenting basic theories, meaning that learning will begin with presenting basic theories and concepts.to decline**
- **Analysis decline And representedBy modelSimple, by buildingModel of the phenomenon studied.**
- **Use of studiesEconomicPractical applications and experiments in various fields, such as:**
- **Agricultural sciences and medical sciences, for the purpose of explaining how to useRegression modelIn practical life.**
- **Providing individual guidance to students to understand theories and practical exercises, and guiding them in solving problems and understanding results.**
- **Organizing group discussions aboutRegression model building processes, which contributes to the exchange of ideas and mutual learning among students.**
- **Previous studies can be used as examples to analyze and understand the results and statistical analyses used inMultiple linear regression model**
- **Providing continuous assessment of students' performance and providing feedback to guide them and improve their understanding and skills in analysis.**

Multiple linear regression

Evaluation methods

- **Clarification questions**
- **True or false questions**
- **Duties**
- **Self-assessment**
- **Tests (daily, monthly, semester, final)).**

Emotional and value goals

- **The ability to examine and evaluate the topics raised.**
- **The ability to criticize, distinguish and choose between the topics presented.**
- **The ability to produce new ideas**

Teaching and learning methods

- **Brainstorming method**
- **Use decision making to test the best alternative.**
- **Presentation.**

Evaluation methods

- **Various tests (daily, monthly, semester, final)**
- **Oral tests**
- **Duties**

General and transferable skills (other skills related to employability and personal development).

- **Skills in collecting and analyzing information about the concepts of designing and analyzing experiments and how to use them in agricultural fields.**
- **Training and personal development skills on how to apply experimental design concepts in various fields.**
- **Developing the student's ability to build a correct experiment.**

10–Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	Week
Discussion, or and written examination	My presenc		The concept of multiple regression models	3	the first
Discussion, or and written examination	My presenc		The concept of multicollinearity	3	the secon
Discussion, or and written examination	My presenc		least squares method	3	the third
Discussion, or and written examination	My presenc		Linear correlation	3	Fourth
Discussion, or and written examination	My presenc		simple linear correlation	3	Fifth
Discussion, or and written examination	My presenc		partial correlation coefficient	3	Sixth
Discussion, or and written examination	My presenc		Multiple correlation coefficient	3	Seventh

Discussion, or and written examination	My presenc		Exercise/exam solutions	3	The eight
Discussion, or and written examination	My presenc		Rank-trait correlation coefficient	3	Ninth
Discussion, or and written examination	My presenc		Significance test of parameters	3	tenth
Discussion, or and written examination	My presenc		Confidence limits for landmarks	3	eleventh
Discussion, or and written examination	My presenc		Comparison between simple and multiple linear regression	3	twelfth
Discussion, or and written examination	My presenc		Significance tests of the parameters as a whole	3	thirteenth
Discussion, or and written examination	My presenc		Multiple nonlinear feature estimation methods	3	fourteent
Discussion, or and written examination	My presenc		Second semester exam	3	fifteenth

11–Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

- **60 marks written final exam.**
- **40 degrees of special endeavor divided into:**
- **5 attendance marks.**
- **5 marks homework with.**
- **15 marks first written exam**
- **15 marks for the second written exam**

12–Learning and teaching resources

Regression analysis **Prof. Dr. Khashe' Al-Rawi**	Required textbooks (methodology if any)
	Main references (sources)
	Recommended supporting books and references (scientific journals, reports…)
Nothing	Electronic references, websites

Course Description Form

1–Course name
Operation Research
2–codeThe decision
33211OR 2
3–the chapter /year
First semester/third stage/2025–2026
4–Date preparedDescription
21/9/2025
5–AAvailable attendance forms
My presence
6–Number of study hours (total) / Number of units (total)
3/3
7–Course Instructor Name(If more than one name is mentioned)
Name: Karim Qasim Muhammad Email: kareem@uodiyala.edu.i
8–Course objectives

Course objectives • **Introducing the student to the most important foundations and principles of operations research and quantitative decision-making.** • **Explaining the concept of programming mathematical problems** • **Highlighting the importance of mathematical concepts and solution methods using quantitative mathematics**	**Course objective** **Acade** **mic**
9 Teaching and learning strategies	
Course outcomes, teaching, learning and assessment methods • **Cognitive objectives:- Making the student able to** • **- To know the most important principles and basic concepts in quantitative programming and applied mathematics.**	**Strategy**

- **- To identify the types of functions and relationships on functions.**
- **To learn programming tools and make the best decisions**
- **To express his opinion on the concepts of quantitative mathematics and programming**
-
- **To apply the concepts of applied mathematics with real-life examples and case studies.**

Course skill objectives

- **Interactive skills: having the ability to communicate with the subject teacher and colleagues**
- **Diagnostic skills: the ability to build programs and their real-world applications.**
- **Scientific reports.**

Teaching and learning methods

- **Managing the lecture in a practical manner related to the reality of daily life to attract the student to the subject of the lesson without straying from the core of the subject so that the material is flexible and capable of being understood and analyzed.**
- **Discussion and dialogue**
- **Enrichment questions**
- **Direct interrogation**

Evaluation methods

- **Clarification questions**
- **True or false questions**
- **Duties**
- **Self-assessment**
- **Tests (daily, monthly, semester, final)).**

Emotional and value goals

- **Simple thinking: (analyzing the problem in a logical, mathematical way and finding solutions based on the expected results)**
- **Critical thinking: (the ability to criticize and distinguish between the topics presented and choose between them)**

- **Creative thinking: (the ability to produce new ideas and methods of solution).**

Teaching and learning methods

- **Brainstorming method**
- **Use decision making to test the best alternative.**
- **Presentation.**

Evaluation methods

- **Various tests (daily, monthly, semester, final)**
- **Oral tests**
- **Duties**

General and transferable skills (other skills related to employability and personal development).

- **Skills in collecting and analyzing information about mathematical concepts and how to use them in the fields of statistics and computers.**
- **Training and personal development skills on how to apply programming mathematics concepts in various fields.**
- **Developing the student's ability to deal with the Internet..**

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	Week
Discussion, oral and written examinatio and practica application	**My presence**	**Introduction to OR**	**Students must be Able to understand some concepts BasicIn programmi mathematics, operations research, programming and computersGive examples**	**3**	**the first**
Discussion, oral and written examinatio and practica application	**My presence**	**Introduction to linear programming**	**Learn about lin mathematical mod linear programmi and operati research.**	**3**	**the second**
Discussion, oral and	**My presence**	**Method of solving linear**	**Methods for solv linear programs**	**3**	**the third**

written examinatior and practica application		programming			
Discussion, oral and written examinatior and practica application	My presence	Transportation	Learn about transportation mode and their economic applications.	3	Fourth
Discussion, oral and written examinatior and practica application	My presence	Assignment problem	How to solve optima allocation problems	3	Fifth
Discussion, oral and written examinatior and practica application	My presence	First exam	First test and evaluation	3	Sixth
Discussion, oral and written examinatior and practica application	My presence	Testing of primal solution	Understand the concept of initial solution and optimal solution in transportation mode	3	Seventh
Discussion and written test and practica application	My presence	Stepping stone	How to test the ini solution for ro hopping transp models	3	The eighth
Discussion, oral and written examinatior and practica application	My presence	Modified distribution	Use of the adjus distribution meth for testing	3	Ninth
Discussion, oral and written examinatior and practica	My presence	Practical examples	Practical examples	3	tenth

application					
Discussion, oral and written examinatio and practica application	My presence	Second exam	Second test a evaluation	3	eleventh
Discussion, oral and written examinatio and practica application	My presence	Network analysis	Learn about netw analysis	3	twelfth
Discussion, oral and written examinatio and practica application	My presence	PERT	Learn about Be style	3	thirteenth
Discussion, oral and written examinatio and practica application	My presence	Reduce (time / cost)	How to red completion times	3	fourteenth
Discussion and written test and practica application	My presence	Game theory.	The concept competition and theory of profit a loss	3	fifteenth
Editorial + Applied	My presence	Final exam	Level assessment	3	sixteenth

11–Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

- **60 marks written final exam.**
- **40 degrees of special endeavor divided into:**
- **5 attendance marks.**
- **5-10 marks homework with.**
- **15 marks written exam.**
- **5 marks oral exam.**

12–Learning and teaching resources

Introduction to Operations Research	**Required textbooks (methodology if any)**
Gupta. Er. Prem Kumar, 2019 "Proplems in operations Research Principles and Solutions" Tribunals and Forums of New Delhi. India, ISBN: 978-81-219-0968-6.	**Main references (sources)**
	Recommended supporting books and references (scientific journals, reports…)
Internet	**Electronic references, websites**

Course Description Form

1–Course name
Vital Statistics 2
2–codeThe decision
33214Dem2
3–the chapter /year
Second Semester / Third Stage / 2025 – 2026
4–Date preparedDescription
21/9/2025
5–Available attendance forms
My presence
6–Number of study hours (total) / Number of units (total)
hours theory vs. 2 hours practical
7–Course Instructor Name(If more than one name is mentioned)
Name: gheada Ebraheem Email: gh.gheadaa @uodiyala.edu.iq

8–Course objectives	
Course objectives • Application to actual data/Assign students to read the topic in advance from several academic sources related to the course and lecture. • After teaching the subject, the researcher will be able to assist researchers in various scientific applications. • Being able to analyze data and draw conclusions that lead to sound decision making • Students prepare brief reports on some of the course topics and discuss them in the lecture. • Practical exercises on how to measure the levels of (theme) according to the available data and how to interpret the results • How to use statistical software such asSPSS, MINTAB, SAS The student graduates with knowledge of this important applied material in all research fields.	Course objectives

9– Teaching and learning strategies	
• knowledge and understanding • - Ability to analyze data using statistical programs. • Providing students with applied statistical knowledge various areas of life, such as social, economic, and others.	Strategy

- **The ability to familiarize the student with statistical tes and interest in studying cases in the health and agricultu fields and providing data for application and extracti results.**
- **The student's understanding of the concept of analysis a benefiting from it in his future practical life.**
- **Subject-specific skills**
- **Employment skills using appropriate statistical analysis data. Through the theoretical aspect on real data.**
- **Skills to reach future decisions and make appropria decisions based on foundations**
- **scientifically sound**
- **Teaching and learning methods**
- **Giving lectures and providing continuous and practi exercises on various phenomena such as economic a demographic.**
- **And others to know the use of statistics in various fields**
- **Organize group discussions aboutAnalyze a specific ti series, which contributes to the exchange of ideas a mutual learning among students.**
- **Evaluation methods**
- **Periodic exams and discussions on the lecture topic**
- **thinking skills**
- **Think and listen to the question.**
- **Understand the question.**
- **Focus on the requirements of the question.**
- **Accurate and scientific answer to the requirements of t question**

10–Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
iscussion, oral and written examination	presence	Test of proportions and correlations	Test of proportions and correlations	2	the first
iscussion, oral and written examination	presence	Exercises on the kinship test	Exercises on the kinship test	2	the secor

)iscussion, oral and written examination	presence	One or two sample signal test	One or two sample signal test	2	the third
)iscussion, oral and written examination	presence	Exercises on the kinship test	Exercises on the kinship test	2	Fourth
)iscussion, oral and written examination and practical application	presence	Wilcoxon rank sum test	Wilcoxon rank sum test	2	Fifth
)iscussion, oral and written examination	presence	Wilcoxon rank sum test	Wilcoxon rank sum test	2	Sixth
)iscussion, oral and written examination	presence	Chi-square test	Chi-square test	2	Seventh
)iscussion, oral and written examination	presence	First exam	First exam	2	The eigh
)iscussion, oral and written examination	presence	Tests on association	Tests on association	2	Ninth
)iscussion, oral and written examination	presence	Exercises on the association test	Exercises on the association test	2	tenth
)iscussion, oral and written examination	presence	Regression tests	Regression tests	2	eleventh
)iscussion, oral and written examination	presence	Regression Testing Exercises	Regression Testing Exercises	2	twelfth
)iscussion, oral and written examination	presence	Compatibility table test	Compatibility table test	2	thirteent
)iscussion, oral and written examination	presence	Second exam	Second exam	2	fourteen
)iscussion, oral and written examination	presence	Test of proportions and correlations	Vital applications	2	fifteenth

11.Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

- **50 marks for a final written exam and 10 marks for a final practical exam.**
- **40 degrees of special endeavor divided into:**
- **5 attendance marks.**
- **5-10 marks for homework with a practical exam.**
- **15 marks written exam.**
- **5 marks oral exam.**

12.Learning and teaching resources

There are no books or methodological sources.	**Required textbo (methodology if any)**
Computer applications using softwareSPSS **Kamal Alwan Al-Mashhadani, Dr. Imad Hazem Abboudi** **Dr. Suhail Najm Abdullah** **Department of Statistics, College of Administration and Economics, University of Baghdad / 2012** **Biostatistics using softwarespss** **Assistant Professor Dr. Jassim Mohammed Khalaf Al-Tamimi** **Professor Dr. Wissam Malik Daoud**	**Main references (sources)**
Biostatistics A foundation for analysis in the health sciences	**Recommended supporting books and references (scientific journals, reports…)**
	Electronic referenc websites

Course Description Form

1–Course name
Mathematical Statistics 2
2–codeThe decision
33209Math 2
3–the chapter /year
Second semester/third stage/2025–2026
4–Date preparedDescription
21/9/2025
5–Available attendance forms
My presence
6–Number of study hours (total) / Number of units (total)
3/3
7–Course Instructor Name(If more than one name is mentioned)
Name: Inaam Abdul Rahman , Email: inaamsta@uodiyala.edu.iq
8–Course objectives

Course objectives	Course objectives
• Introducing the student to the most importantVocabularyMathemati statisticsThe order and its importance. • What do distributions mean?Composite statistic. • What are the steps of statistical analysis based statistics?Mathematical and estimation of distribution parameters. • Developing work on integrating mathematical statistical distributions • Knowledge of conditional mathematical statistics	

9 Teaching and learning strategies	
Course outcomes, teaching, learning and assessment methods theCognitive objectives • The student should know the informationStatisticsSports. • The student should know the most important basics of science.StatisticsThe athlete. • The student should know the most important statistical distributions. • The student should know the method of presenting and analyzing data and what are the most important statistical distributions that are appropriate for the	Strategy

work environment. • **The student should know the method of analysis and inference.** • **Skill objectiveshCourse specific** • **Interactive skills/student interaction with the environment.** • **Personal skills / ability to diagnose statistical information and its distributions from reality.** • **Analytical skills / ability to analyze digital information realistically.** • **Teaching and learning methods** • **Managing the lecture in a practical manner related to the reality of daily life to attract the student to the subject of the lesson without straying from the core of the subject so that the material is flexible and capable of being understood and analyzed.** • **Discussion and dialogue** • **Enrichment questions** • **Direct interrogation** • **Evaluation methods** • **Clarification questions** • **True or false questions** • **Duties** • **Self-assessment** • **Tests (daily, monthly, quarterly, final)).** • **Emotional and value goals** • **Simple thinking: (analyzing the problem in a statistical and mathematical way and finding solutions based on the expected results)** • **Critical thinking: (the ability to criticize and distinguish between the topics presented and choose between them)** • **3-Creative thinking: (the ability to produce new ideas and methods of solution).** • **Teaching and learning methods** • **Brainstorming method** • **Use decision making to test the best alternative.** • **PresentationAnd.** • **Evaluation methods** • **-Various tests(Daily, monthly, quarterly, final** • **Oral tests** • **Duties** • **General and transferable skills (other skills related to**	

employability and personal development). • Skills in collecting and analyzing information about mathematical concepts and how to use them in the fields of statistics. • Training and personal development skills on how to apply mathematical concepts in different fields. • Developing the student's ability to deal with the Internet..	

10–Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Watches	week
Self-assessment/tests/ oral	Lecture and discussion	Distribution of order statistics	Distribution of order statistics	3	1
Self-assessment/tests/ oral	Lecture and discussion	Distribution of order statistics	Distribution of order statistics	3	2
Self-assessment/tests/ oral	Lecture and discussion	Sampling theory for finding distribution	Sampling theory for finding distribution	3	3
Self-assessment/tests/ oral	Lecture and discussion	Transformation of variable of discrete	Transformation of variable of discrete	3	4
Self-assessment/tests/ oral	Lecture and discussion	Transformation of variable of continuous	Transformation of variable of continuous	3	5
Self-assessment/tests/ oral	Lecture and discussion	Extensions of change of variable technique	Extensions of change of variable technique	3	6
Self-assessment/tests/ oral	Lecture and discussion	T distribution	T distribution	3	7
Self-assessment/tests/ oral	Lecture and discussion/exam	T distribution	T distribution	3	8
Self-assessment/tests/ oral	Lecture and discussion	F distribution	F distribution	3	9
Self-	Lecture and	F distribution	F distribution	3	10

assessment/tests/ oral	discussion				
Self-assessment/tests/ oral	Lecture and discussion	Compound distribution like beta – binomial	Compound distribution like beta - binomial	3	11
Self-assessment/tests/ oral	Lecture and discussion	Compound distribution like beta – binomial	Compound distribution like beta - binomial	3	12
Self-assessment/tests/ oral	Lecture and discussion	Limiting moment – generating function	Limiting moment – generating function	3	13
Self-assessment/tests/ oral	Lecture and discussion	Central limit theorem	Central limit theorem	3	14
Self-assessment/tests/ oral	clarification Questions	Exam	Exam	3	15

11–Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

- **60 marks written final exam.**
- **40 degrees of special endeavor divided into:**
- **5 attendance marks.**
- **5-10 marks homework with.**
- **15 marks written exam.**
- **5 marks oral exam.**

12–Learning and teaching resources

Introduction to mathematical statistics /dr. iden hassan, dr. hamza Ismael	Required textbooks (methodology if any
Introduction to mathematical statistics /dr. iden hassan, dr. hamza Ismael	Main references (sources)
athematical statistics /Robert Hogg	Recommended supporting books and references (scientific journals, reports…)
Iraqi Virtual Library/External Interr Research.	Electronic references, websites

Course Description Form

1–Course name
Demographic Analysis 2
2–codeThe decision
33214Dem 2
3–the chapter /year
Second semester/third stage/2026–2025
4–Date preparedDescription
21/9/2025
5–AAvailable attendance forms
My presence
6–Number of study hours (total) / Number of units (total)
3/3
7–Course Instructor Name(If more than one name is mentioned)
Name:. Wahab Salem Mohammed Email:wahabsalim72@gmail.com
8–Course objectives

Course objectives	Course objectives Academic
• Introducing the student to the most important foundations and principles of economic statistics • Explaining the concept of economic statistics • Highlighting the importance of economic statistics in practice • This course aims to study the methods of economic statistics. The student should be able to classify, collect and descri data.	

9. Teaching and learning strategies	Strategy
• Course outcomes, teaching, learning and assessment methods • Cognitive objectives:- Making the student able to • To know the most important principles and basic concepts in demographic statistics. • To determine the methods of demographic statistics. • To understand the concept of demographic statistics methods • To express his opinion on the concepts of demographic statistics	

• **To apply survey concepts with real-life examples and case studies.** • **Course skill objectives** • **Interactive skills: the ability to communicate with the subject teacher and colleagues.** • **Diagnostic skills: the ability to diagnose problems and solve them.** • **Scientific reports.** • **Teaching and learning methods** • **Managing the lecture in a practical manner related to the reality of daily life to attract the student to the subject of the lesson without straying from the core of the subject so that the material is flexible and capable of being understood and analyzed.** • **Discussion and dialogue** • **Enrichment questions** • **Direct interrogation** • **Evaluation methods** • **Clarification questions** • **True or false questions** • **Self-assessment** • **Tests (daily, monthly, semester, final)).** • **Emotional and value goals** • **Simple thinking: (analyzing the problem in a statistical and mathematical way and finding solutions based on the expected results)** • **Critical thinking: (the ability to criticize and distinguish between the topics presented and choose between them)** • **Creative thinking: (the ability to produce new ideas and methods of solution).** • **Teaching and learning methods** • **Brainstorming method** • **Use decision making to test the best alternative.** • **Presentation.** • **Evaluation methods** • **Various tests (daily, monthly, semester, final)** • **2-Oral tests** • **Duties** • **General and transferable skills (other skills related to employability and personal development).** • **Skills in collecting and analyzing information about**	

demographic statistics concepts and how to use them in the fields of statistics. • **Training and personal development skills on how to apply appreciation concepts in different fields.** ○ **Developing the student's ability to deal with the Internet..**	

12.Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
Discussion, or and written examination	My presence	Definition and objectives of statisticsDemographicand statisticsImmigration	Basic Concepts/Definitions of Migration	3	the first
Discussion, or and written examination	My presence	Migration rates and proportions	Migration rates and proportions	3	the secon
Discussion, or and written examination	My presence	Marriage and divorce rates	Marriage and divorce	3	the third
Discussion, or and written examination	My presence	Learn about the most important demographic surveys	learning	3	Fourth
Discussion, or and written examination	My presence	Learning on the workforce	Workforce	3	Fifth
Discussion, or and written examination	My presence	Labor force, working time, and labor productivity statistics	Industry	3	Sixth
Discussion, or and written examination	My presence	Definition and objectives of statisticsPopulation	miscarriage	3	Seventh
Discussion, or and written examination	My presence	TheLearn about the most important methods of population statistics.	The composition method	3	The eight
Discussion, or and written examination	My presence	theLearn about the most important ways to immigrate	Immigration routes	3	Ninth
Discussion, or and written examination	My presence	Imami migration	Imamate migration	3	tenth
Discussion, or and written	My presence	reverse migration	reverse migration	3	eleventh

examination					
Discussion, or and written examination	My presence	First month test of the first semestersecond	How to extend marriage	3	twelfth
Discussion, or and written examination	My presence	Sprague rates	Sprague rates	3	thirteenth
Discussion, or and written examination	My presence	General concepts	General concepts	3	fourteent
Discussion, or and written examination	My presence	Second semester exam	Exam exercises solution	3	fifteenth

10.Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

- **60 marks written final exam.**
- **40 degrees of special endeavor divided into:**
- **5 attendance marks.**
- **5-10 marks homework with.**
- **15 marks written exam.**
- **marks oral exam.**

11.Learning and teaching resources

bookPrinciples of Statistics Dr. Dhafer Hussein Rashid	Required textbooks (methodology if any)
	Main references (sources)
	Recommended supporting books and references (scientific journals, reports…)
	Electronic references, websites

Course Description Form

1.Course name
Numerical Analysis 2
2.codeThe decision
Num 233215
3.the chapter /year
Second Semester / Third Stage / 2025-2026
4.Date preparedDescription
21/9/2025
5.AAvailable attendance forms
My presence
6.Number of study hours (total) / Number of units (total)
3/3
7.Course Instructor Name(If more than one name is mentioned)
Name: Sami Abdullah Abdel Email:samiaabed@uodiyala.edu.iq

8.Course objectives	
• Introducing the student to how to arrive at mathematical concepts v approximate numerical solutions • The student learns how to deal with large numbers and how to perfo repetitive operations on them. For high accuracy • Introducing the student to how to apply numerical algorithms v extreme precision	Course objectives

9.Teaching and learning strategies	
Course outcomes, teaching, learning and assessment methods • **Cognitive objectives:- Making the student able to** • **- To know the most important principles and basic concepts in mathematics.** • **- To identify the types of functions and relationships on functions.** • **To know the concept of derivative and derivative laws** • **To express his opinion on mathematical concepts** • **To apply mathematical concepts with real-life examples and case studies.**	**Strategy**

Course skill objectives

- **- Interactive skills: having the ability to communicate with the subject teacher and colleagues**
- **-Diagnostic skills: the ability to diagnose functions and their real-world applications.**
- **Scientific reports.**
- **Teaching and learning methods**
- **Managing the lecture in a practical manner related to the reality of daily life to attract the student to the subject of the lesson without straying from the core of the subject so that the material is flexible and capable of being understood and analyzed.**
- **-Discussion and dialogue**
- **Enrichment questions**
- **Direct interrogation**

Evaluation methods

- **Clarification questions**
- **True or false questions**
- **Duties**
- **Self-assessment**
- **Tests (daily, monthly, semester, final)).**

Emotional and value goals

- **Simple thinking: (analyzing the problem in a statistical and mathematical way and finding solutions based on the expected results)**
- **Critical thinking: (the ability to criticize and distinguish between the topics presented and choose between them)**
- **Creative thinking: (the ability to produce new ideas and methods of solution).**
- **Teaching and learning methods**
- **Brainstorming method**
- **Use decision making to test the best alternative.**
- **Presentation.**
- **Evaluation methods**
- **Various tests (daily, monthly, semester, final)**
- **Oral tests**
- **Duties**
- **General and transferable skills (other skills related to employability and personal development).**
- **Skills in collecting and analyzing information about mathematical concepts and how to use them in the fields of**

statistics. • **Training and personal development skills on how to apply mathematical concepts in different fields.** • **Developing the student's ability to deal with programs and the Internet..**	

13. Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
Exam	recitati	Forward-detached power series	Understandi variables Forces	2	1
Exam	recitati	Backward-return power series	Identify the types The forces of the loose	2	2
Exam	recitati	Central differences	Understanding central differences	2	3
Exam	recitati	Completion formulas Newton's forward formula	Knowing the ways complete	2	4
Exam	recitati	Newton's formula backward	Knowing the ways complete	2	5
Exam	recitati	- Divided differences	Knowing the ways complete	2	6
Exam	recitati	Newton's divisor	Knowing the ways complete	2	7
Exam	recitati	Chaos forward	Knowing the ways complete	2	8
Exam	recitati	Chaos back	Knowing the ways complete	2	9
Exam	recitati	Lagrange for different periods	The benefit of seri Forces	2	10

Exam	recitati	Numerical differentiation and numerical integration - Derivation of the numerical differential formula	Understanding Differential Calculu Numerical integration	2	11
Exam	recitati	theTComplete numerical Trapezoid	Understanding Differential Calculu Numerical integration	2	12
Exam	recitati	Simpson	Understanding Differential Calculu Numerical integration	2	13
Exam	recitati	Solving differential equations	Find the numerica solution for differential equations	2	14
Exam	recitati	Gauss-Jacobi -seidel	Numerical solutior of systems Equations	2	15

10. Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

- **60 marks written final exam.**
- **40 degrees of special endeavor divided into:**
- **5 attendance marks.**
- **5-10 marks homework with.**
- **15 marks written exam.**
- **5 marks oral exam.**

11. Learning and teaching resources

Numerical Analysis Book by I Faris Ahmed, Dr. Iqb Mahmoud, Dr. Fadaa Mazhar	Required textbooks (methodology if any)
Introduction to Numeric Analysis, by Dr. Ahmed Al-Alusi, Adel Al-Bayati	Main references (sources)
Numerical Analysis Richard L. Burden, J. Douglas Faires	Recommended supporting books and references (scientific journals, reports…)
	Electronic references, websites

Statistics Departmen

The four stage

Semester one

2026 –2025

ModelCourse Description

1.Course name
Multivariate 1
2.codeThe decision
34106 Multl
3.the chapter /year
First semester/fourth stage/2025-2026
4.Date preparedDescription
21/9/2025
5.AAvailable attendance forms
My presence
6.Number of study hours (total) / Number of units (total)
3/3
7.Course Instructor Name(If more than one name is mentioned)
Name: Hisham Feraawn Email: hisham@uodiyala.edu.iq
8.Course objectives

Course objectives **Student's knowledge of conceptsBasicOn dealing with matrices through phenomena and applied examples, and linking the subject of multiple variables with the subject of linear algebra, which the student studied over two semesters (the first on matrices and the second on linear algebra).** **Student's knowledge of concepts The basics of multivariate material, starting with one variable, two variables, or more, and linking the concepts of variables to the normal distribution with two or more variables, and benefiting from that by writing the normal distribution function for one or two variables.**	**Course objectives**

9. Teaching and learning strategies	
knowledge and understanding **Ability to analyze data using statistical programs.** **Providing students with applied statistical knowledge in various areas of life, such as social, economic, and others.** **The ability to familiarize the student with statistical tests and interest in studying cases in the health and agricultural fields and providing data for application and extracting results.** **The student's understanding of the concept of analysis and benefiting from it in his future practical life.**	**Strategy**

Subject-specific skills
Employment skills using appropriate statistical analysis of data. Through the theoretical aspect on real data.
Skills to reach future decisions and make appropriate decisions based on foundation scientifically sound
Teaching and learning methods
Giving lectures and providing continuous and practical exercises on various phenomena such as economic and demographic.
And others to know the use of statistics in various fields
Organize group discussions on the analysis of a specific time series, which contribute to the exchange of ideas and mutual learning among students.

Evaluation methods
Periodic exams and discussions on the lecture topic
thinking skills
Think and listen to the question.
Understand the question.
Focus on the requirements of the question.
Accurate and scientific answer to the requirements of the question

10.Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
Self-assessment/tests/oral/enrichmentSolve examples in the section and take a daily exam And (homework)	Lecture and discussion	The matrix, trace of matrix, identity matrix, the vector, matrix operation, type (diagonal, triangular, null, addition, multiplication)	The matrix, trace of matrix, identity matrix, the vector, matrix operation, type (diagonal, triangular, null, addition, multiplication)	3	1
Self-assessment/tests/oral/enrichmentSolve examples in the section and take a daily exam And (homework)	Lecture and discussion	Distribution and association Laws for matrices, multiplication by diagonal matrix, linear equation	Distribution and association Laws for matrices, multiplication by diagonal matrix, linear equation	3	2

Self-assessment/tests/oral/enrichmentSolve examples in the section and take a daily exam And (homework)	**Lecture and discussion**	**Vector operation (inner product, leangth, norm, normalization, orthogonal, orthonormal, linear independent)**	**Vector operation (inner product, leangth, norm, normalization, orthogonal, orthonormal, linear independent)**	**3**	**3**
Self-assessment/tests/oral/enrichmentSolve examples in the section and take a daily exam And (homework)	**Lecture and discussion**	**The determination of square matrix, minor inverse matrix, rank of matrix, elementary row (column), generalized inverse matrix**	**The determination of square matrix, minor inverse matrix, rank of matrix, elementary row (column), generalized inverse matrix**	**3**	**4**
Self-assessment/tests/oral/enrichmentSolve examples in the section and take a daily exam And (homework)	**Lecture and discussion**	**Similar linear equation: (homogeneous system, non homogeneous system) of equation, orthogonal matrix properties of orthogonal matrix**	**Similar linear equation: (homogeneous system, non homogeneous system) of equation, orthogonal matrix properties of orthogonal matrix**	**3**	**5**
Self-assessment/tests/oral/enrichmentSolve examples in the section and take a daily exam And (homework)	**Lecture and discussion**	**Quadratic form: type of quadratic forms. Idempotent matrix, properties of Idempotent matrix**	**Quadratic form: type of quadratic forms. Idempotent matrix, properties of Idempotent matrix**	**3**	**6**
Self-assessment/tests/oral/enrichmen	**Lecture and**	**Characteristic roots and**	**Characteristic roots and vector**	**3**	**7**

tSolve examples in the section and take a daily exam And (homework)	**discussion**	**vector of a matrix.**	**of a matrix.**		
Self-assessment/tests/oral/enrichmentSolve examples in the section and take a daily exam And (homework)	**Lecture and discussion**	**Partition matrices, properties of partition, sum, product, determination and inverse of partition**	**Partition matrices, properties of partition, sum, product, determination and inverse of partition**	**3**	**8**
Self-assessment/tests/oral/enrichmentSolve examples in the section and take a daily exam And (homework)	**Lecture and discussion**	**Differentiation with vectors and matrices, hessian matrix, determination of maximum and minima**	**Differentiation with vectors and matrices, hessian matrix, determination of maximum and minima**	**3**	**9**
Self-assessment/tests/oral/enrichmentSolve examples in the section and take a daily exam And (homework)	**Lecture and discussion**	**Multivariate normal distribution, Multivariate joint distribution, absolute**	**Multivariate normal distribution, Multivariate joint distribution, absolute**	**3**	**10**
Self-assessment/tests/oral/enrichmentSolve examples in the section and take a daily exam And (homework)	**Lecture and discussion**	**Marginal and conditional distribution, independent partial correlation coefficient**	**Marginal and conditional distribution, independent partial correlation coefficient**	**3**	**11**
Self-assessment/tests/oral/enrichmentSolve examples in the section and take a daily exam And (homework)	**Lecture and discussion**	**Moment of multidimensional variables, variance, covariance, and correction**	**Moment of multidimensional variables, variance, covariance, and correction**	**3**	**12**
Self-assessment/tests/oral/enrichmentSolve examples in the section and take a daily exam And (homework)	**Lecture and discussion**	**Transformation of variables**	**Transformation of variables**	**3**	**13**

Self-assessment/tests/oral/enrichmentSolve examples in the section and take a daily exam And (homework)	**Lecture and discussion**	**Multivariate normal distribution: density standard form of normal density, conditional density of the multivariate normal distribution.**	**Multivariate normal distribution: density standard form of normal density, conditional density of the multivariate normal distribution.**	**3**	**14**
Self-assessment/tests/oral/enrichmentSolve examples in the section and take a daily exam And (homework)	**Lecture and discussion**	**Properties of multiple normal distribution**	**Properties of multiple normal distribution**	**3**	**15**

11.Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.
50 marks for a final written exam and 10 marks for a final practical exam.
40 degrees of special endeavor divided into:
5 attendance marks.
5-10 marks for homework with a practical exam.
15 marks written exam.
5 marks oral exam.

12.Learning and teaching resources

Multivariate Analysis Dr. Ziad Al-Rawi	**Required textbooks (methodology any)**
Raykov, T. & Marcoulides G.; (2008); "An Introduction to Applied Multivariate Analysis"; Routledge: Taylor & Francis Group; New-York	**Main references (sources)**
	Recommended supporting books and references (scientific journals, reports...)
	Electronic references, websites
-Data collection and analysis skills. **2-Skills of deduction and developing theoretical solutions.** **3-Skills in dealing with data and its huge numberbig data**	**General skills andQualificationMovable(Skills Other related to employability and development(Personal).**

Course Description Form

1.Course name
Statistical Inference 1
2.codeThe decision
34101In–Est
3.the chapter /year
First semester/fourth stage/2025–2026
4.Date preparedDescription
21/9/2025
5.AAvailable attendance forms
My presence
6.Number of study hours (total) / Number of units (total)
3/3
7.Course Instructor Name(If more than one name is mentioned)
Name:. Inaam Abdul Rahman Noman Email: inaamsta@uodiyala.edu.iq
8.Course objectives

Course objectives ▪ Introducing the student to the most important principlesStatisti inference and its importance. ▪ What do you meanStatistical estimates. ▪ What are the steps of statistical analysis based on?Statistical estimate ▪ What are the methods?Statistical decision making. • Developing the inference method.	**Course objectives**
9. Teaching and learning strategies	
Course outcomes, teaching, learning and assessment methods **theCognitive objectives** • **The student should know the information about statistical estimates.** • **The student should know the most important basics of statistical inference.** • **The student should know the most important statistical hypothesis testing.** • **The student should know the method of presenting and analyzing data and the most important statistical**	**Strategy**

estimation methods that suit the community being studied. • **The student should know the method of analysis and inference.** • **Skill objectiveshCourse specific** • **Interactive skills/student interaction with the environment.** • **Personal skills / ability to diagnose statistical information and its distributions from reality.** • **Analytical skills / ability to analyze digital information realistically.** • **Teaching and learning methods** • **Managing the lecture in a practical manner related to the reality of daily life to attract the student to the subject of the lesson without straying from the core of the subject so that the material is flexible and capable of being understood and analyzed.** • **Discussion and dialogue** • **Enrichment questions** • **Direct interrogation** • **Evaluation methods** • **Clarification questions** • **True or false questions** • **Duties** • **Self-assessment** • **Tests (daily, monthly, quarterly, final)).** • **Emotional and value goals** • **Simple thinking: (analyzing the problem in a statistical and mathematical way and finding solutions based on the expected results)** • **Critical thinking: (the ability to criticize and distinguish between the topics presented and choose between them)** • **Creative thinking: (the ability to produce new ideas and methods of solution).** • **Teaching and learning methods** • **Brainstorming method** • **Use decision making to test the best alternative.** • **PresentationAnd.** • **Evaluation methods** • **Various tests(Daily, monthly, quarterly, final**	

- **Oral tests**
- **Duties**
- **General and transferable skills (other skills related to employability and personal development).**
- **Skills in collecting and analyzing information about mathematical concepts and how to use them in the fields of statistics.**
- **Training and personal development skills on how to apply mathematical concepts in different fields.**
- **Developing the student's ability to deal with the Internet..**

10.Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Watches	week
Self-assessment/tests/oral/enrichment	Lecture and discussion	Introduction	Introduction	3	1
Self-assessment/tests/oral/enrichment	Lecture and discussion	point estimation	point estimation	3	2
Self-assessment/tests/oral/enrichment	Lecture and discussion	Unbiasedness mean square error	Unbiasedness mean square error	3	3
Self-assessment/tests/oral/enrichment	Lecture and discussion	Consistency	consistency	3	4
Self-assessment/tests/oral	Lecture and discussion	Sufficient estimation	Sufficient estimation	3	5
Self-assessment/tests/oral	Lecture and discussion	Exponential family	Exponential family	3	6
Self-assessment/tests/oral	Lecture and discussion	Rao-blackweet theorem	Rao-blackweet theorem	3	7
Self-assessment/tests/oral	Lecture and discussion/exam	Minimum variance a bound estimation	Minimum variance a bound estimation	3	8
Self-assessment/tests/oral	Lecture and discussion	Introduction to confidence interval	Introduction to confidence interval	3	9
Self-assessment/t	Lecture and	confidence interval for the mean	confidence interval for the mean	3	10

ests/oral	discussion				
Self-assessment/tests/oral	Lecture and discussion	confidence interval for the two means	confidence interval for the two means	3	11
Self-assessment/tests/oral	Lecture and discussion	confidence interval for the variance	confidence interval for the variance	3	12
Self-assessment/tests/oral	Lecture and discussion	confidence interval for the two variance	confidence interval for the two variance	3	13
Self-assessment/tests/oral	Lecture and discussion	Application	Application	3	14
Self-assessment/tests/oral	Lecture and discussion	Exam	Exam	3	15

11.Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

- **60 marks written final exam.**
- **40 degrees for seeking, divided into:**
- **5 attendance marks.**
- **10 marks homework with.**
- **15 marks written exam.**
- **5 marks oral exam.**

12.Learning and teaching resources

Statistical inference Prof. Dr. Abdul Majeed Hamza Al-Nasser Prof. Dr. Dhafer Hussein Rashid	**Required textbooks (methodology if any)**
Statistical inferenceProf. Dr. Abdul Majeed Hamza Al-Nasser Prof. Dr. Dhafer Hussein Rashid/Dr. Iden Hassan, Dr. Hamza Ismael	**Main references (sources)**
thematical statistics /Robert Hogg	**Recommended supporting books and references (scientific journals, reports…)**
Iraqi Virtual Library/Extern Internet Research.	**Electronic references, websites**

Course Description Form

1.Course name
Statistical Applications 1
2.codeThe decision
34105Appl
3.the chapter /year
First semester/fourth stage/2026-2025
4.Date preparedDescription
21/9/2025
5.Available attendance forms
My presence
6.Number of study hours (total) / Number of units (total)
3/2
7./Course Instructor Name(If more than one name is mentioned)
Name: Arshad Hamid Hassan Email: arshadhameed@uodiyala.edu.iq
8.Course objectives

Course objectives	**Course objectives**
▪ **Student definitionBalApplications anostatistical** ▪ **Providing the student with different topics abouttheApplicatio anostatistical** • **Explain the importance of theApplicationsunlessStatistics.**	

9. Teaching and learning strategies	
• **Cognitive objectives** • **The student should know the most important principles and basic concepts of statistical applications.** • **The student should explain the statistical concepts in statistical applications.** • **The student should apply the concepts of statistical applications in theoretical and practical reality.** • **To be creative in using modern and contemporary concepts**	**Strategy**

in statistical applications.

- To express an opinion or issue a judgment on statistical concepts in statistical applications.
- - Course specific skill objectives.
- Communication skills: - Possess a high level of skills in information technology, working with others (love of teamwork)
- Analytical skills: Skills to identify the relationship between mathematical and statistical concepts in statistical applications.
- Teaching and learning methods
- Using brainstorming Brain Storming.
- Use of various mind maps.
- Use problem solving method.
- Using the presentation method Presentation
- Evaluation methods
- Objective questions Objective Test items are divided into:
- True or false questions True/False Items
- Multiple choice questions Multiple Choice Items
- Interview questions Matching Items
- homework Homework assignments
- Self-assessment and peer assessment Peer and Self-Assessment
- Tests are divided into:
- Formative achievement tests accompanying teaching plans
- Various final achievement tests:
- Monthly final exams at the end of each academic month
- Final exams at the end of each semester
- Final exams at the end of the academic year.

10.Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Watches	week
Discussion, oral and written examinatio	My presen	Definition of simulation, definition of programmingMatlab	Introducing the student to simulation and how to use the programMatlab	3	the first
Discussion, oral and written	My presen	Data generation by inverse method, data generation for continuous distributions	Explain how to generate data	3	the secon

examinatio					
Discussion, oral and written examinatio	My presen	Practical application	Practical application	3	the third
Discussion, oral and written examinatio	My presen	Generating distributions (exponential, uniform, gamma)	Explain how to generate data	3	Fourth
Discussion, oral and written examinatio	My presen	Generating data using the inverse method for discrete distributions	Explain how to generate data	3	Fifth
Discussion, oral and written examinatio	My presen	Generating distributions (Poisson, binomial, geometric)	Explain how to generate data	3	Sixth
Discussion, oral and written examinatio	My presen	Practical application	Practical application	3	Seventh
Discussion, oral and written examinatio	My presen	First monthly test for the second semester	----------	3	The eight
Discussion, oral and written examinatio	My presen	Generating a normal distribution using the Box-Miller method	Explain how to generate data	3	Ninth
Discussion, oral and written examinatio	My presen	Generating the dependent variable according to the linear regression model	Explain how to generate data	3	tenth
Discussion, oral and written examinatio	My presen	Practical application	Practical application	3	eleventh
Discussion, oral and written examinatio	My presen	Case Study Application: Hypothesis Testing	Introducing the student to how to use simulation in case studies	3	twelfth
Discussion,	My presen	Case Study Application: Analysis of Variance for	Introducing the student to how to use	3	thirteenth

oral a written examinatio		One Criterion	simulation in case studies		
Discussion, oral a written examinatio	My presen	Practical application	Practical application	3	fourteent
Discussion, oral a written examinatio	My presen	Second monthly test for the second semester	----------	3	fifteenth

11.Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

- **60 marks written final exam.**
- **40 degrees of special endeavor divided into:**
- **10 attendance marks.**
- **5 marks homework with.**
- **15 marks written exam.**
- **10 marks oral exam.**

12.Learning and teaching resources

	Required textbooks (methodology if any)
	Main references (sources)
	Recommended supporting books and references (scientific journals, reports…)
	Electronic references, websites

Course Description Form

1.Course name
Time Series Analysis 1
2.codeThe decision
34104Tim I
3.the chapter /year
First semester/fourth stage/2026-2025
4.Date preparedDescription
21/9/2025
5.AAvailable attendance forms
My presence
6.Number of study hours (total) / Number of units (total)
3/2.5
7.Course Instructor Name(If more than one name is mentioned)
Name: Amal Hadi Email: amal@uodiyala.edu.iq
8.Course objectives

Course objectives: In most areas of life, including industrial and economic, well as demographic and medical changes, we need statistical methods a techniques to analyze and process phenomena and also to predict the futu through them, as time series analysis is considered one of the most import statistical methods that can be combined with different fields, especially economic field, as it is used to determine the general trend of time series data well as cyclical and seasonal changes in addition to irregular and rand changes related to the occurrence of unexpected developments such as occurrence of natural or health disasters or wars and disturbances... Therefo this course aims to **Identify the most important basic components of a time series.** • **Method for estimating the basic components of time series a final models.** • **Statistical analysis of time series using statistical programs.** • **How to know the stationarity of the time series.** • **Methods of comparing models.** • **Internal and external forecasting based onFoundation year.**	**Course objectives**

9. Teaching and learning strategies	
• **knowledge and understanding**	**Strategy**

- **Ability to analyze data using statistical programs.**
- **Providing students with applied statistical knowledge in various areas of life, such as social, economic, and others.**
- **The student's ability to know how to estimate data, forecast and use it for planning purposes.**
- **The student's understanding of the concept of analysis and benefiting from it in his future practical life.**
- **Subject-specific skills**
- **Employment skills using appropriate statistical analysis of data. Through the theoretical aspect on real data.**
- **Skills to reach future predictions and make appropria decisions based on foundations**
- **scientifically sound**

- **Teaching and learning methods**
- **Giving lectures and providing continuous and practi exercises on various phenomena such as economi demographics, and others to learn how to use statist in various fields.**
- **Organize group discussions aboutAnalyze a speci time series, which contributes to the exchange of ide and mutual learning among students.**

- **Evaluation methods**
- **Periodic exams and discussions on the lecture topic**

- **thinking skills**
- **Think and listen to the question.**
- **Understand the question.**
- **Focus on the requirements of the question.**
- **Accurate and scientific answer to the requirements the question**

10.Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
Discussion an Test Oral and	My preser	The concept of time series, the concept of forecasting and its types	knowledge a understandi	3	the first

written					
Discussion an Test Oral and written	My preser	- Data emergence patterns - Data types for time series	mental skills	3	the seco
Discussion an Test Oral and written	My preser	- The most important metrics used in quantitative forecasting - General concepts of forecasting using time series	knowledge and understanding	3	the third
Discussion an Test Oral and written	My preser	- Accuracy of prediction methods - autocovariance function - autocorrelation function - Properties of the autocorrelation function - partial autocorrelation function - Sample autocorrelation function - Partial autocorrelation function of the sample	mental skills	3	Fourth
Discussion an Test Oral and written and practical application	My preser	- Case studies using statistical programs	knowledge and understanding	3	Fifth
Discussion an Test Oral and written	My preser	- Types of models in analysis methods - Time series analysis methods The cumulative model With practical application	mental skills	3	Sixth
Discussion an Test Oral and written	My preser	General direction vehicle and methods of finding it	knowledge and understanding	3	Seventh

Discussion an Test Oral and written	My preser	Season vehicle and ways to find it	mental skills	3	The eigh
Discussion an Test Oral and written	My preser	- cyclical and episodic changes - Finding the components of a time series - How to draw - direction vehicle - semi-average method With practical application	knowledge and understanding	3	Ninth
Discussion an Test Oral and written	My preser	- Case studies using statistical programs	mental skills	3	tenth
Discussion an Test Oral and written	My preser	- least squares method - Moving media method - Central moving media method	knowledge and understanding	3	eleventh
Discussion an Test Oral and written	My preser	Excluding the effect of the general trend	mental skills	3	twelfth
Discussion an Test Oral and written	My preser	- seasonal changes - Methods for calculating the seasonal index	knowledge and understanding	3	thirteen
Discussion an Test Oral and written	My preser	- Averages method - Method of proportion to moving media - Single exponential preamble - Practical application	mental skills	3	fourteen
Discussion an Test Oral and written	My preser	First semester exam	knowledge and understanding	3	fifteenth

11. Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

- **50 marks for a final written exam and 10 marks for a final practical exam.**

- **40 degrees of special endeavor divided into:**
- **5 attendance marks.**
- **5-10 marks for homework with a practical exam.**
- **15 marks written exam.**
- **marks oral exam.**

12. Learning and teaching resources

Time series 1 **Time Series and Index** **authored by Dr. Abdul La** **Hassan Shoman and I** **Nizar Al-Sarraf**	**Required textbooks (methodology if any)**
William W.S. Wei(2006) "Time Series Analysis: Univariate and Multivariate Methods" Addison-Wesley Pub.	**Main references (sources)**
James Douglas Hamilton(1994) "Time Series Analysis" Wiley.	**Recommended supporting books and references (scientific journals, reports…)**
	Electronic references, websites

Course Description Form

1.Course name
Research methodology
2.codeThe decision
3.the chapter /year
First semester/fourth stage/2025-2026
4.Date preparedDescription
21/9/2025
5.AAvailable attendance forms
My presence
6.Number of study hours (total) / Number of units (total)
2 hours per week / 30 hours total
7.Course Instructor Name(If more than one name is mentioned)
Name:. Omer Adel Abd El-wahab, Email:omersta@uodiyala.edu.iq
8.Course objectives

Course objectives • **Introducing the student to the most important foundations and principles of the research methodology subject** • **Explaining the concept and basics of writing scientific research** • **Highlighting the importance of field and counterfield in research writing** • **This course aims to study how to write a graduation research for the student and how to write scientific research.**	**Course objectives**
9. Teaching and learning strategies	
Course outcomes, teaching, learning and assessment methods • **Cognitive objectives:- Making the student able to** • **- To know the most important principles and basic concepts of scientific research.** • **- To identify and define the types of research sources required.** • **To learn the correct foundations of scientific research**	**Strategy**

- **To express his opinion on writing scientific research**
- **To apply what he has studied by writing the required graduation research.**

Course skill objectives

- **Interactive skills: the ability to communicate with the subject teacher and colleagues.**
- **Diagnostic skills: the ability to write a graduation research paper**
- **Scientific reports.**
- **Teaching and learning methods**
- **Managing the lecture in a practical manner related to the reality of daily life to attract the student to the subject of the lesson without straying from the core of the subject so that the material is flexible and capable of being understood and analyzed.**
- **Discussion and dialogue**
- **Enrichment questions**
- **Direct interrogation**
- **Evaluation methods**
- **Clarification questions**
- **True or false questions**
- **Duties**
- **Self-assessment**
- **Tests (daily, monthly, semester, final)).**
- **Emotional and value goals**
- **Simple thinking: (analyzing the problem and finding solutions based on the expected results)**
- **Critical thinking: (the ability to criticize and distinguish between the topics presented and choose between them)**
- **Creative thinking: (the ability to produce new ideas and methods of solution).**
- **Teaching and learning methods**
- **Brainstorming method**
- **Use decision making to test the best alternative.**
- **Presentation.**
- **Evaluation methods**
- **Various tests (daily, monthly, semester, final)**
- **2-Oral tests**
- **Duties**
- **General and transferable skills (other skills related to**

employability and personal development). • Skills of collecting and analyzing information about scientific research methods and how to use them in the fields of statistics. • Training and personal development skills on how to apply scientific research writing concepts in various fields. • Developing the student's ability to deal with the Internet..	

10. Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
Discussion, oral and written examinatio	My presenc	Introduction to cientific Research		2	the first
Discussion, oral and written examinatio	Introductio to Scienti Research	Introduction to cientific Research		3	the secon
Discussion, oral and written examinatio	My presenc	Introduction to cientific Research		3	the third
Discussion, oral and written examinatio	My presenc	Research ntroductions and resentation of its ntroductory pages		3	Fourth
Discussion, oral and written examinatio	My presenc	Research ntroductions and resentation of its ntroductory pages		3	Fifth
Discussion, oral and written examinatio	My presenc	Research ntroductions and resentation of its ntroductory pages		3	Sixth
Discussion, oral and written examinatio	My presenc	Methodological framework of the research		3	Seventh

Discussion, oral and written examinatio	My presenc	Methodological ramework of the research		3	The eight
Discussion, oral and written examinatio	My presenc	Methodological ramework of the research		3	Ninth
Discussion, oral and written examinatio	My presenc	The theoretical, analytical and concluding ramework of the research		3	tenth
Discussion, oral and written examinatio	My presenc	The theoretical, analytical and concluding ramework of the research		3	eleventh
Discussion, oral and written examinatio	My presenc	The theoretical, analytical and concluding ramework of the research		3	twelfth
Discussion, oral a written examinatio	My presenc	chnical aspects of writing scientific research		3	thirteenth
Discussion, oral a written examinatio	My presenc	r technical aspects writing scientific research		3	fourteent
Discussion, oral a written examinatio	My presenc	r technical aspects writing scientific research		3	fifteenth

11. Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

- **60 marks written final exam.**
- **40 degrees of special endeavor divided into:**
- **5 attendance marks.**
- **5-10 marks homework with.**
- **15 marks written exam.**

• **marks oral exam.**

12.Learning and teaching resources	
	Required textbooks (methodology if any)
Book (Writing a Scientific Research Methodology)	**Main references (sources)**
External reports	**Recommended supporting books and references (scientific journals, reports…)**
Various websites	**Electronic references, websites**

Course Description Form

1.Course name
Design and analysis of experiments$_1$
2.codeThe decision
DES I34102
3.the chapter /year
First semester/fourth stage/2026-2025
4.Date preparedDescription
21/9/2025
5.AAvailable attendance forms
My presence
6.Number of study hours (total) / Number of units (total)
3/3
7.Course Instructor Name(If more than one name is mentioned)
NameWahab Salem Mohammed Email: Wahabsta@uodiyala.edu.iq
8.Course objectives

Course objectives	**Course objectiv**
• **Introducing the student to the theoretical foundations of the subject as well as its practical application.** • **It aims to build a design model that matches reality based on experience.** • **And characteristics that must be available in order to obtain the best design that simulates the practical reality of phenomena.** • **studied** • **Building statistical analysis skills and how to obtain an analysis of the phenomenon studied through** • **Knowing the factor affecting it.**	

9. Teaching and learning strategies	
Course outcomes, teaching, learning and assessment methods **Make the student able to:** • **Understand the basics of experimental design and analysis** • **Understand the complete design of the blind** • **Understanding Randomized Complete Block Design**	**Strategy**

- **Understanding the Latin Square Design**
- **Understanding the design of the Latin-Greek square**
- **Understanding the design of the Youden square**
- **Understanding global experiences**
- **Understanding the split pieces**
- **Understanding Analysis of Covariance**

Course skill objectives

- **Interactive skills: the ability to communicate with the subject teacher and colleagues.**
- **Diagnostic skills: the ability to deal with the statistical problem.**
- **Analytical skills: The ability to analyze and distinguish between different types of analytical commands in the program.**
- **Teaching and learning methods**
- **Presenting the basic theories, that is, the beginning of learning will be by presenting the basic theories and concepts of design.**
- **AnalysisExperiments are represented by simple experiments, by building a design for the phenomenon.**
- **Using case studies and practical applications of experiments in various fields, such as:**
- **Agricultural sciences, medical sciences, physical and chemical sciences for the purpose of explaining how to use experimental design in practical life.**
- **Providing individual guidance to students to understand theories and practical exercises, and guiding them in solving problems and understanding results.**
- **Organizing group discussions on constructing, designing, and analyzing a specific experiment, which contributes to the exchange of ideas and mutual learning among students.**
- **Previous studies can be used as examples to analyze and understand the results and statistical analyses used in**
- **Design and analysis of simple experiments.**
- **Providing continuous assessment of students' performance and providing feedback to guide them and improve their understanding and skills in analysis.**
- **Simple experiments.**
- **Evaluation methods**
- **Clarification questions**
- **True or false questions**
- **Duties**

- **Self-assessment**
- **Tests (daily, monthly, semester, final)).**
- **Emotional and value goals**
- **The ability to examine and evaluate the topics raised.**
- **The ability to criticize, distinguish and choose between the topics presented.**
- **The ability to produce new ideas**
- **Teaching and learning methods**
- **Brainstorming method**
- **Use decision making to test the best alternative.**
- **Presentation.**
- **Evaluation methods**
- **Various tests (daily, monthly, semester, final)**
- **Oral tests**
- **Duties**
- **General and transferable skills (other skills related to employability and personal development).**
- **Skills in collecting and analyzing information about the concepts of designing and analyzing experiments and how to use them in agricultural fields.**
- **Training and personal development skills on how to apply experimental design concepts in various fields.**
- **Developing the student's ability to build a correct experiment.**

10.Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	Week
Discussion, or and written examination	My presence		Concepts and terms in experimental design experience The worker Treatment Experimental piece or uni Randomization	3	the first
Discussion, or and written examination	My presence		repetition experimental error Design Good Experience Essentials Analysis of variance	3	the second
Discussion, or and written examination	My presence		Simple experimental designs Fully integrated design	3	the third

			Mathematical model **Statistical analysis** **Experience (1)** **Contrast compounds** **Experience (2)** **Processor variance homogeneity**		
Discussion, or and written examination	**My presence**		**Bartlett's test** **Cochran test** **Application (1)** **Application (2)** **Experience (3)**	**3**	**Fourth**
Discussion, or and written examination	**My presence**		**Experience (4)** **Completely randomized design with more than one observation of the experimental unit (plot)** **One** **Experience (5)**	**3**	**Fifth**
Discussion, or and written examination	**My presence**		**Tests** **Tests to be determined before the experiment** **Perpendicular intersections** **Example (1)** **Example (2)** **Example (3)** **Experience (6)** **Pickling trends** **Experience (7)**	**3**	**Sixth**
Discussion, or and written examination	**My presence**		**Tests suggested after trial** **Multiple comparison methods** **Methods that rely on calculating a single test value** **Least significant difference method** **Application (3)** **Healing method** **Application (4)** **Toki method** **Application (5)** **Methods that rely on calculating several test values** **Duncan's multi-range method** **Application (6)**	**3**	**Seventh**

			Student Niemann-Cohls Method Donut method Application (7)		
Discussion, or and written examination	**My presence**		**Random complete sectors Design specifications Representing results (responses) with symbols Mathematical model Estimating model effects Statistical analysis Experience (8)**	**3**	**The eighth**
Discussion, or and written examination	**My presence**		**Missing values and methods of estimation Application (8) Standard errors Relative adequacy of randomized complete block design Application (9)**	**3**	**Ninth**
Discussion, or and written examination	**My presence**		**incomplete randomized block designs The idea of incomplete sector designs Balanced incomplete randomized block design Mathematical model of design Statistical analysis**	**3**	**Tenth**
Discussion, or and written examination	**My presence**		**Building balanced imperfect section designs Experience (9)**	**3**	**Eleventh**
Discussion, or and written examination	**My presence**		**Experience (10) Correction of processor averages Test the difference between the means of two corrected treatments**	**3**	**Twelfth**
Discussion, or and written examination	**My presence**		**Latin square design Design specifications Mathematical model of design Statistical analysis**	**3**	**Thirteenth**
Discussion, or and written	**My presence**		**Experience (11) Estimating missing values**	**3**	**Fourteenth**

examination			Application (10) Standard errors Experience (12) relative sufficiency Application (11)		
Discussion, or and written examination	My presence		First semester exam	3	Fifteenth

11. Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

- **60 marks written final exam.**
- **40 degrees of special endeavor divided into:**
- **5 attendance marks.**
- **5 marks homework with.**
- **marks first written exam**
- **arks for the second written exam**

12. Learning and teaching resources

Experimental Design and Analysis of Results (Part 1)(Part Two) Professor Kamal Alwan Khalaf Al-Mashhadani	**Required textbooks (methodology if any)**
Experimental Design and Analysis Howard J. Seltman July 11, 2018	**Main references (sources)**
International Journal of Experimental Design and Process Optimization Modern Experimental Design	**Recommended supporting books and references (scientific journals, reports…)**
Nothing	**Electronic references, websites**

Course Description Form

1.Course name
Economic Measurement1
2.codeThe decision
34103Eco I
3.the chapter /year
First semester/fourth stage/2026-2025
4.Date preparedDescription
21/9/2025
5.AAvailable attendance forms
My presence
6.Number of study hours (total) / Number of units (total)
3/3
7.Course Instructor Name(If more than one name is mentioned)
Name. Aqeel Hamid FarhanEmail: aqeelsta@uodiyala.edu.iq
8.Course objectives

Course objectives • **Introducing the student to the most important foundations and principles of the subject of economic measurement** • **Explaining the concept of estimation methods** • **Highlighting the importance of regression model estimation problems** • **This course aims to study the standard problems of estimating regression models.**	**Course objectives**
9. Teaching and learning strategies	
Course outcomes, teaching, learning and assessment methods • **Cognitive objectives:- Making the student able to** • **- To know the most important principles and basic concepts in economic measurement.** • **- To determine the methods of assessment.** • **To understand the concept of regression problems** • **To express his opinion on the concepts of assessment methods** • **To apply the concepts of economic measurement with real-life examples and case studies.**	**Strategy**

Course skill objectives

- **Interactive skills: the ability to communicate with the subject teacher and colleagues.**
- **Diagnostic skills: the ability to diagnose problems and solve them.**
- **Scientific reports.**

- **Teaching and learning methods**
- **Managing the lecture in a practical manner related to the reality of daily life to attract the student to the subject of the lesson without straying from the core of the subject so that the material is flexible and capable of being understood and analyzed.**
- **Discussion and dialogue**
- **Enrichment questions**
- **Direct interrogation**
- **Evaluation methods**
- **Clarification questions**
- **True or false questions**
- **Duties**
- **Self-assessment**
- **Tests (daily, monthly, semester, final)).**
- **Emotional and value goals**
- **Simple thinking: (analyzing the problem in a statistical and mathematical way and finding solutions based on the expected results)**
- **Critical thinking: (the ability to criticize and distinguish between the topics presented and choose between them)**
- **Creative thinking: (the ability to produce new ideas and methods of solution).**
- **Teaching and learning methods**
- **Brainstorming method**
- **Use decision making to test the best alternative.**
- **Presentation.**
- **Evaluation methods**
- **Various tests (daily, monthly, semester, final)**
- **Oral tests**
- **Duties**
- **General and transferable skills (other skills related to employability and personal development).**

- **Skills in collecting and analyzing information about economic measurement concepts and how to use them in the fields of statistics.**
- **Training and personal development skills on how to apply appreciation concepts in different fields.**
    - **Developing the student's ability to deal with the Internet..**

10.Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	Week
Discussion, or and written examination	My presence	The nature of standard analysis	Definitions and concepts	3	the first
Discussion, or and written examination	My presence	Standard analysis functions	Foundations of standard analysis	3	the secon
Discussion, or and written examination	My presence	Linking internal and external variables	Understanding Relationships	3	the third
Discussion, or and written examination	My presence	Statistical and measurement indicators	Key concepts	3	Fourth
Discussion, or and written examination	My presence	Statement that the methodols is the best unbiased linear estimate.	Theoretical steps	3	Fifth
Discussion, or and written examination	My presence	Estimating the consumption function	Real-life applications	3	Sixth
Discussion, or and written examination	My presence	Simple linear regression analysis	Practical exercises	3	Seventh
Discussion, or and written examination	My presence	First month exam	monthly test	3	The eight
Discussion, or and written examination	My presence	A study of economic phenomena from the reality of the Iraqi economy	Practical exercises	3	Ninth
Discussion, or and written examination	My presence	Generalized Linear Regression Model	Key concepts	3	Tenth
Discussion, or and written examination	My presence	Extracting statistical and quantitative	Foundations of Standard Analysis	3	Eleventh

		indicators from regression analysis			
Discussion, or and written examination	My presence	Statistical hypothesis	Key concepts	3	Twelfth
Discussion, o and writt examination	My presence	Correlation and its relationship to the coefficient of determination	Understanding Relationships	3	thirteentl
Discussion, o and writt examination	My presence	statistical significance	Key concepts	3	fourteent
Discussion, o and writt examination	My presence	First semester exam		3	Fifteenth

11.Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

- 60 marks written final exam.
- 40 degrees of special endeavor divided into:
- 5 attendance marks.
- 5-10 marks homework with.
- 15 marks written exam.
- marks oral exam.

12.Learning and teaching resources

bookEconomic Measurement Dr. Amouri Hadi Kazim	Required textbooks (methodology if any)
The Economic Measurement Book by Dr. Amori Hadi Kazim	Main references (sources)
	Recommended supporting books and references (scientific journals, reports…)
	Electronic references, websites

Statistics Department

The four stage

Semester two

2026–2025

Course Description Form

1.Course name
Multivariate 2
2.codeThe decision
34213Mult 2
3.the chapter /year
First semester/fourth stage/2026-2025
4.Date preparedDescription
21/9/2025
5.AAvailable attendance forms
My presence
6.Number of study hours (total) / Number of units (total)
3/3
7.Course Instructor Name(If more than one name is mentioned)
Name: Hisham Faroun Abdel Latif Email: hisham@uodiyala.edu.iq
8.Course objectives

Course objectives	Course objectives
• Student's knowledge of conceptsBasicOn dealing with matrices through phenomena and applied examples, and linking the subject of multiple variables with the subject of linear algebra, which the student studied over two semesters (the first on matrices and the second on linear algebra). • Student's knowledge of concepts The basics of multivariate material, starting with one variable, two variables, or more, and linking the concepts of variables to the normal distribution with two or more variables, and benefiting from that by writing the normal distribution function for one or two variables.	

9. Teaching and learning strategies	
• knowledge and understanding • Ability to analyze data using statistical programs. • Providing students with applied statistical knowledge in various areas of life, such as social, economic, and others. • The ability to familiarize the student with statistical tests and interest in studying cases in the health and agricultural fields and providing data for application and extracting results. • The student's understanding of the concept of analysis and benefiting from it in his future practical life.	Strategy

- **Subject-specific skills**
- **Employment skills using appropriate statistical analysis of data. Through the theoretical aspect on real data.**
- **Skills to reach future decisions and make appropriate decisions based on foundations**
- **scientifically sound**
- **Teaching and learning methods**
- **Giving lectures and providing continuous and practical exercises on various phenomena such as economic and demographic.**
- **And others to know the use of statistics in various fields**
- **Organize group discussions on the analysis of a specific time series, which contributes to the exchange of ideas and mutual learning among students.**
- **Evaluation methods**
- **Periodic exams and discussions on the lecture topic**
- **thinking skills**
- **Think and listen to the question.**
- **Understand the question.**
- **Focus on the requirements of the question.**
- **Accurate and scientific answer to the requirements of the question**

10.Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	Week
Self-assessment/tests/oral/enrichment Solve examples in the section and take a daily exam And (homework)	Lecture and discussion	Tests of MVN concerning means	Knowing the basic concepts	3	1
Self-assessment/tests/oral/enrichment Solve examples in the section and take a daily exam And (homework)	Lecture and discussion	Case (A), Case (B) and Case (C)	Solve various questions	3	2
Self-assessment/tests/oral/enrichment Solve examples in the section and take a daily exam And (homework)	Lecture and discussion	Hotelling test	Knowing the test format	3	3
Self-assessment/tests/oral/enrichment Solve examples in the section and take a daily exam And (homework)	Lecture and discussion	Mahalanobis test	Knowing the test format	3	4
Self-assessment/tests/oral/enrichment Solve examples in the section and take a daily exam	Lecture and discussion	Test of Correlation	Know the correlation account	3	5

And (homework)					
Self-assessment/tests/oral/enrichment Solve examples in the section and take a daily exam And (homework)	Lecture and discussion	First exam		3	6
Self-assessment/tests/oral/enrichment Solve examples in the section and take a daily exam And (homework)	Lecture and discussion	Factor Analysis	Understanding the calculation method	3	7
Self-assessment/tests/oral/enrichment Solve examples in the section and take a daily exam And (homework)	Lecture and discussion	Discriminant Analysis	Knowledge of discriminant analysis	3	8
Self-assessment/tests/oral/enrichment Solve examples in the section and take a daily exam And (homework)	Lecture and discussion	Cluster Analysis	Knowledge of cluster analysis	3	9
Self-assessment/tests/oral/enrichment Solve examples in the section and take a daily exam And (homework)	Lecture and discussion	Canonical analysis	Understanding Legal Binding	3	10
Self-assessment/tests/oral/enrichment Solve examples in the section and take a daily exam And (homework)	Lecture and discussion	Second exam		3	11
Self-assessment/tests/oral/enrichment Solve examples in the section and take a daily exam And (homework)	Lecture and discussion	Profile Analysis	Knowing the criminal analysis account	3	12
Self-assessment/tests/oral/enrichment Solve examples in the section and take a daily exam And (homework)	Lecture and discussion	Special Topics	Applications	3	13
Self-assessment/tests/oral/enrichment Solve examples in the section and take a daily exam And (homework)	Lecture and discussion	Special Topics	Applications	3	14
Self-assessment/tests/oral/enrichment Solve examples in the section and take a daily exam	Lecture and discussion	Final exam		3	15

And (homework)					

14. Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

- **50 marks for a final written exam and 10 marks for a final practical exam.**
- **40 degrees of special endeavor divided into:**
- **5 attendance marks.**
- **5-10 marks for homework with a practical exam.**
- **15 marks written exam.**
- **5 marks oral exam.**

11.Learning and teaching resources

Multivariate Analysis Dr. Ziad Al-Rawi	**Required textbooks (methodology any)**
Raykov, T. & Marcoulides G.; (2008); "An Introduction to Applied Multivariate Analysis"; Routledge: Taylor & Francis Group; New-York	**Main references (sources)**
	Recommended supporting books and references (scientific journals, reports...)
	Electronic references, websites
-Data collection and analysis skills. **2-Skills of deduction and developing theoretical solutions.** **3-Skills in dealing with data and its huge numberb data**	**General skills andQualificationMovable(SkillsOther related to employability and development(Personal).**

Course Description Form

1.Course name
Design and analysis of experiments$_2$
2.codeThe decision
Des 234209
3.the chapter /year
Second semester/fourth stage/2026-2025
4.Date preparedDescription
21/9/2025
5.AAvailable attendance forms
My presence
6.Number of study hours (total) / Number of units (total)
3/3
7.Course Instructor Name(If more than one name is mentioned)
Name: Wahab Salem Mohammed Email: Wahabsta@uodiyala.edu.iq
8.Course objectives

Course objectives	**Course objectives**
• **Introducing the student to the theoretical foundations of the subject as well as its practical application.** • **It aims to build a design model that matches reality based on experience.** • **And characteristics that must be available in order to obtain the best design that simulates the practical reality of phenomena.** • **studied** • **Building statistical analysis skills and how to obtain an analysis of the phenomenon studied through** • **Knowing the factor affecting it.**	

9. Teaching and learning strategies	
Course outcomes, teaching, learning and assessment methods **Make the student able to:** • **Understand the basics of experimental design and analysis** • **Understand the complete design of the blind** • **Understanding Randomized Complete Block Design** • **Understanding the Latin Square Design**	**Strategy**

- **Understanding the design of the Latin-Greek square**
- **Understanding the design of the Youden square**
- **Understanding global experiences**
- **Understanding the split pieces**
- **Understanding Analysis of Covariance**

Course skill objectives

- **Interactive skills: the ability to communicate with the subject teacher and colleagues.**
- **Diagnostic skills: the ability to deal with the statistical problem.**
- **Analytical skills: the ability to analyze and distinguish between different types of orders.AnalyticalIn the program.**

Teaching and learning methods

- **Presenting the basic theories, that is, the beginning of learning will be by presenting the basic theories and concepts of design.**
- **AnalysisExperiments are represented by simple experiments, by building a design for the phenomenon.**
- **Using case studies and practical applications of experiments in various fields, such as:**
- **Agricultural sciences, medical sciences, physical and chemical sciences for the purpose of explaining how to use experimental design in practical life.**
- **Providing individual guidance to students to understand theories and practical exercises, and guiding them in solving problems and understanding results.**
- **Organizing group discussions on constructing, designing, and analyzing a specific experiment, which contributes to the exchange of ideas and mutual learning among students.**
- **Previous studies can be used as examples to analyze and understand the results and statistical analyses used in**
- **Design and analysis of simple experiments.**
- **Providing continuous assessment of students' performance and providing feedback to guide them and improve their understanding and skills in analysis.**
- **Simple experiments.**
- **Evaluation methods**
- **Clarification questions**
- **True or false questions**
- **Duties**
- **Self-assessment**
- **Tests (daily, monthly, semester, final)).**
- **Emotional and value goals**
- **The ability to examine and evaluate the topics raised.**

- **The ability to criticize, distinguish and choose between the topics presented.**
- **The ability to produce new ideas**
- **Teaching and learning methods**
- **Brainstorming method**
- **Use decision making to test the best alternative.**
- **Presentation.**
- **Evaluation methods**
- **Various tests (daily, monthly, semester, final)**
- **2-Oral tests**
- **Duties**
- **General and transferable skills (other skills related to employability and personal development).**
- **Skills in collecting and analyzing information about the concepts of designing and analyzing experiments and how to use them in agricultural fields.**
- **Training and personal development skills on how to apply experimental design concepts in various fields.**
- **Developing the student's ability to build a correct experiment.**

10.Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
Discussion, or and written examination	My presence		Greek Latin square design Mathematical model Experience (1) missing values Experience (2)	3	the firs
Discussion, or and written examination	My presence		Yoden square design Mathematical model Statistical analysis Experience (2)	3	the second
Discussion, or and written examination	My presence		The global experience Factorial experiment with completely randomized design Experience (3) Experience (4)	3	the thi
Discussion, or and written examination	My presence		Experience (5) Factorial experiment with randomized complete block design Statistical analysis Experience (6)	3	Fourth
Discussion, or and written	My presence		Latin square factorial design Mathematical model	3	Fifth

examination			Experience (7)		
Discussion, or and written examination	My presence		Integration How to apply the idea of integration Types of integration Experience (8)	3	Sixth
Discussion, or and written examination	My presence		Experience (9) Integration methods for global experiences in four sectors The first method The second method	3	Seventi
Discussion, or and written examination	My presence		Partial replication of factorial experiments Partial repetition formation	3	The eighth
Discussion, or and written examination	My presence		Partial replication with eight processors Experience (9)	3	Ninth
Discussion, or and written examination	My presence		split-piece experiments Split-plot experiments with completely randomized design Experience (10)	3	tenth
Discussion, or and written examination	My presence		Randomized complete block design split plot experiments Experience (11)	3	eleven
Discussion, or and written examination	My presence		Latin square split-piece experiments Experience (12)	3	twelfth
Discussion, or and written examination	My presence		Analysis of covariance Linear model in analysis of covariance Analysis of covariance with a completely randomized design Experience (13)	3	thirtee h
Discussion, or and written examination	My presence		Analysis of covariance with randomized complete block design Experience (14) Analysis of covariance with Latin square design Experience (15)	3	fourtee th
Discussion, or and written examination	My presence		Second semester exam	3	fifteent
11.Course Evaluation					
The grade is distributed out of 100 based on the tasks assigned to the student, such as					

daily preparation, daily, oral, monthly and written exams, reports, etc.

- **60 marks written final exam.**
- **40 degrees of special endeavor divided into:**
- **5 attendance marks.**
- **5 marks homework with.**
- **15 marks first written exam**
- **15 marks for the second written exam**

12.Learning and teaching resources

Experimental Design and Analysis of Results (Part 1)(Part Two) Professor Kamal Alwan Khalaf Al-Mashhadani	**Required textbooks (methodology if any)**
Experimental Design and Analysis Howard J. Seltman July 11, 2018	**Main references (sources)**
International Journal of Experimental Design and Process Optimization Modern Experimental Design	**Recommended supporting books and references (scientific journals, reports…)**
Nothing	**Electronic references, websites**

Course Description Form

1.Course name
Statistical Applications 2
2.codeThe decision
34212APP 2
3.the chapter /year
Second semester/fourth stage/2026-2025
4.Date preparedDescription
21/9/2025
5.AAvailable attendance forms
My presence
6.Number of study hours (total) / Number of units (total)
3/2
7.Course Instructor Name(If more than one name is mentioned)
Name: Arshad Hamid Hassan arshadhameed@uodiyala.edu.iq
8.Course objectives

Course objectives	**Course objectives**
▪ **Student definitionBalApplications anostatistical** ▪ **Providing the student with different topics abouttheApplicatio anostatistical** • **Explain the importance of theApplicationsunlessStatistics.**	

9. Teaching and learning strategies.	
• **Cognitive objectives** • **The student should know the most important principles and basic concepts of statistical applications.** • **The student should explain the statistical concepts in statistical applications.** • **The student should apply the concepts of statistical applications in theoretical and practical reality.** • **To be creative in using modern and contemporary concepts in statistical applications.** • **To express an opinion or issue a judgment on statistical concepts in statistical applications.** • **Course specific skill objectives.** • **Communication skills: - Possess a high level of skills in**	**Strategy**

information technology, working with others (love of teamwork)

- **Analytical skills: Skills to identify the relationship between mathematical and statistical concepts in statistical applications.**

- **Teaching and learning methods**
- **Using brainstorming Brain Storming.**
- **Use of various mind maps.**
- **Use problem solving method.**
- **Using the presentation method Presentation**

- **Evaluation methods**
- **Objective questions Objective Test items are divided into:**
- **True or false questions True/False Items**
- **Multiple choice questions Multiple Choice Items**
- **Interview questions Matching Items**
- **homework Homework assignments**
- **Self-assessment and peer assessment Peer and Self-Assessment**
- **Tests are divided into:**
- **Formative achievement tests accompanying teaching plans**
- **Various final achievement tests:**
- **Monthly final exams at the end of each academic month**
- **Final exams at the end of each semester**
- **Final exams at the end of the academic year.**

10.Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
Discussion, or and written examination	My presenc	MATLAB Programming Basics	Review	3	the first
Discussion, or and written examination	My presenc	Using MATLAB	introduction	3	the secon
Discussion, or and written examination	My presenc	Detecting outliers in data	Detect and estimate missing values	3	the third
Discussion, or and written examination	My presenc	Detecting outliers in data Estimation of missing data	Practical application	3	Fourth
Discussion, or and written examination	My presenc	a testChi-Square for goodness of fit	Tested	3	Fifth

Discussion, or and written examination	My presenc	a testChi-Square for goodness of fit	Practical application	3	Sixth
Discussion, or and written examination	My presenc	Drawing the fit of statistical distributions Graphing a simple linear regression equation	Data graphical representation	3	Seventh
Discussion, or and written examination	My presenc	First monthly test for the second semester	----------	3	The eight
Discussion, or and written examination	My presenc	Generating data with autocorrelation problem Testing for the presence of autocorrelation in the data	The problem of self-correlation	3	Ninth
Discussion, or and written examination	My presenc	Generating the problem of non-homogeneity of the variance of the random error terms Addressing the problem of non-homogeneity of the variance of random error terms	Error heterogeneity problem	3	tenth
Discussion, or and written examination	My presenc	The problem of self-correlation Error heterogeneity problem	Practical application	3	eleventh
Discussion, or and written examination	My presenc	Generating the problem of multicollinearity between explanatory variables Detecting multicollinearity in data	Multicollinearity problem	3	twelfth
Discussion, or and written examination	My presenc	Analyzing the questionnaire form through the programSPSS	Questionnaire analysis	3	thirteenth
Discussion, or and written examination	My presenc	Multicollinearity problem Questionnaire analysis	Practical application	3	fourteent
Discussion, or and written examination	My presenc	Second monthly test for the second semester	----------	3	fifteenth

11.Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

- **60 marks written final exam.**
- **40 degrees of special endeavor divided into:**
- **10 attendance marks.**
- **5 marks homework with.**
- **15 marks written exam.**
- **arks oral exam.**

12.Learning and teaching resources

	Required textbooks (methodology if any)
	Main references (sources)
	Recommended supporting books and references (scientific journals, reports…)
	Electronic references, websites

Course Description Form

1.Course name
Econometrics 2
2.codeThe decision
234210 Eco
3.the chapter /year
Second semester/fourth stage/2026-2025
4.Date preparedDescription
21/9/2025
5.AAvailable attendance forms
My presence
6.Number of study hours (total) / Number of units (total)
3/3
7.Course Instructor Name(If more than one name is mentioned)
Name:gheadaa Ibrahime shabe Email: gh.gheadaa@uodiyala.edu.iq

8.Course objectives

Course objectives • **Introducing the student to the most important foundations and principles of econometrics** • **Explaining the concept of statistics** • **Highlighting the importance of statistics in the application** • **This course aims to study statistical methods.** **The student should be able to classify, collect and descri data.**	**Course objectives**

9. Teaching and learning strategies

Course outcomes, teaching, learning and assessment methods • **Cognitive objectives:- Making the student able to** • **To know the most important principles and basic concepts in econometrics.** • **To determine the methods of statistics** • **To know the concept of methodsEconometrics** • **To express his opinion in conceptsEconometrics** • **To apply survey concepts with real-life examples and case studies.** **Course skill objectives**	**Strategy**

• **Interactive skills: the ability to communicate with the subject teacher and colleagues.** • **Diagnostic skills: the ability to diagnose problems and solve them.** • **Scientific reports.** • **Teaching and learning methods** • **Managing the lecture in a practical manner related to the reality of daily life to attract the student to the subject of the lesson without straying from the core of the subject so that the material is flexible and capable of being understood and analyzed.** • **Discussion and dialogue** • **Enrichment questions** • **Direct interrogation** • **Evaluation methods** • **Clarification questions** • **True or false questions** • **Duties** • **Self-assessment** • **Tests (daily, monthly, semester, final)).** • **Emotional and value goals** • **Simple thinking: (analyzing the problem in a statistical and mathematical way and finding solutions based on the expected results)** • **Critical thinking: (the ability to criticize and distinguish between the topics presented and choose between them)** • **Creative thinking: (the ability to produce new ideas and methods of solution).** • **Teaching and learning methods** • **Brainstorming method** • **Use decision making to test the best alternative.** • **Presentation.** • **Evaluation methods** • **Various tests (daily, monthly, semester, final)** • **2-Oral tests** • **Duties** • **General and transferable skills (other skills related to employability and personal development).** • **Skills in collecting and analyzing information about economic measurement concepts and how to use them in the fields of statistics.** • **Training and personal development skills on how to apply appreciation concepts in different fields.**	

• Developing the student's ability to deal with the Internet..	

10.Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	Week
Discussion, or and written examination	My presence	The nature of general linear regression analysis	Definitions and concepts	3	the first
Discussion, or and written examination	My presence	The problem of self-correlation	Key concepts	3	the secon
Discussion, or and written examination	My presence	The problem of self-correlation	Key concepts	3	the third
Discussion, or and written examination	My presence	The problem of self-correlation	General exercises	3	Fourth
Discussion, or and written examination	My presence	Statement that the methodols is the best unbiased linear estimate.	Theoretical steps	3	Fifth
Discussion, or and written examination	My presence	Estimating the production function	Real-life applications	3	Sixth
Discussion, or and written examination	My presence	Generalized Linear Regression Analysis	Practical exercises	3	Seventh
Discussion, or and written examination	My presence	First month exam	monthly test	3	The eight
Discussion, or and written examination	My presence	Multicollinearity problem	Key concepts	3	Ninth
Discussion, or and written examination	My presence	Multicollinearity problem	Key concepts	3	Tenth
Discussion, or and written examination	My presence	Multicollinearity problem	General exercises	3	eleventh
Discussion, or and written examination	My presence	heterogeneity of variance	Key concepts	3	Twelfth
Discussion, or and written examination	My presence	heterogeneity of variance	Key concepts	3	thirteentl
Discussion, or and written examination	My presence	heterogeneity of variance	General exercises	3	fourteent
Discussion, oral a	My presen	Second semester exam		3	fifteenth

written examinatio					

11.Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

- **60 marks written final exam.**
- **40 degrees of special endeavor divided into:**
- **5 attendance marks.**
- **5-10 marks homework with.**
- **15 marks written exam.**
- **marks oral exam.**

12.Learning and teaching resources

bookEconometrics Dr. Dhafer Hussein Rashid	Required textbooks (methodology if any)
	Main references (sources)
	Recommended supporting books and references (scientific journals, reports…)
	Electronic references, websites

Course Description Form

1.Course name
Time Series Analysis 2
2.codeThe decision
34211Tim 2
3.the chapter /year
Second semester/fourth stage/2025-2026
4.Date preparedDescription
21/9/2025
5.AAvailable attendance forms
My presence
6.Number of study hours (total) / Number of units (total)
3 / 2.5
7.Course Instructor Name(If more than one name is mentioned)
Name: Amal Hadi Reshed Email: amal@uodiyala.edu.iq
8.Course objectives

Course objectives: In most areas of life, including industrial and economic, well as demographic and medical changes, we need statistical methods a techniques to analyze and process phenomena and also to predict the futu through them, as time series analysis is considered one of the most import statistical methods that can be combined with different fields, especially economic field, as it is used to determine the general trend of time series data well... Therefore, this course aims to **Identify the most important basic components of a time series.Including learn about statistical models such as autoregressive models and mov averages.ARIMARegular, seasonal and double,That is why this article aims to:** • **Identify the nature of stationary and non-stationary time series, skewness the mean or variance** **Autocorrelation functions and methods for treating unstable series** • **Methods for diagnosing, estimating and testing seasonal and non-seaso** **Box-Jenkins models and the multiplier model.** • **Model fit testing for time series** • **Methods of comparing the models under study.** • **Internal and external forecasting based on optimal modelsTo be used economic and social planning, for statistical comparison purposes, and in ti series analysis.**	**Course objectives**

9. Teaching and learning strategies	
knowledge and understanding	**Strategy**

- **Ability to analyze data.**
- **Providing students with applied statistical knowledge in various areas of life, such as social, economic, and others.**
- **The student's ability to know how to estimate data, forecast and use it for planning purposes.**
- **The student's understanding of the concept of analysis and benefiting from it in his future practical life.**
- **Subject-specific skills**
- **Employment skills using appropriate statistical analysis of data. Through the theoretical aspect on real data.**
- **Skills to reach future predictions and make appropria decisions based on foundations**
    - **scientifically sound**

- **Teaching and learning methods**
- **Giving lectures and providing continuous and practi exercises on various phenomena such as economi physics, and others to learn how to use statistics various fields.**
- **Organize group discussions aboutTime series analys which contributes to the exchange of ideas and mutu learning among students.**

- **Evaluation methods**
- **Periodic exams and discussions on the lecture topic**

- **thinking skills**
- **Think and listen to the question.**
- **Understand the question.**
- **Focus on the requirements of the question.**
- **Accurate and scientific answer to the requirements the question**

10.Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	Week
Discussion, oral and written examination	My presenc	- Double Exponential Boot - Brown's Method - Holt's method	knowledge and understand	3	the first

Discussion, oral and written examination	My presenc	- Triple exponential smoothing method (Winter's method) - Case studies using statistical programs, practical application	mental skills	3	the seco
Discussion, oral and written examination	My presenc	Time series extrapolation - Stability in the arithmetic mean - - Stability in variance	knowledge and understanding	3	the third
Discussion, oral and written examination	My presenc	Data transformations - autocorrelation function - partial autocorrelation function	mental skills	3	Fourth
Discussion, oral and written examination	My presenc	- Box-Jenkins model analysis - Stochastic model (stable and unstable)	knowledge and understanding	3	Fifth
Discussion, oral and written examination	My presenc	- Model building stages - Diagnosis - autoregressive model - Moving Averages Model - simple mixed model	mental skills	3	Sixth
Discussion, oral and written examination	My presenc	- Using the autocorrelation function and the partial autocorrelation function in diagnosis - Methodological approaches to time series data analysis - autocorrelation coefficient - Autocorrelation coefficient test	knowledge and understanding	3	Seventh
Discussion, oral and written examination	My presenc	- Box-Jenkins method for time series analysis - Model diagnosis - autoregressive	mental skills	3	The eigh

		model of degree P - Moving media model of degreeq - Autoregressive moving averages model of degree (p,q)			
Discussion, oral and written examination	My presenc	Estimation using the method of moments and the maximum likelihood method	knowledge and understanding	3	Ninth
Discussion, oral and written examination	My presenc	- Seasonal autoregressive model - Seasonal Moving Average Model Unstationary seasonal mixed model	mental skills	3	Tenth
Discussion, oral and written examination	My presenc	- Model fit check - Price test - Legan Price Test	knowledge and understanding	3	eleventh
Discussion, oral and written examination	My presenc	- multiplier seasonal model - Landmark Appreciation	mental skills	3	Twelfth
Discussion, oral and written examination	My presenc	- Predicting models ARIMA	knowledge and understanding	3	thirteen
Discussion, oral and written examination	My presenc	Case studies using statistical programs	mental skills	3	fourteen
Discussion, oral and written examination	My presenc	Second semester exam	knowledge and understanding	3	fifteenth

11. Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

- **50 marks for a final written exam and 10 marks for a final practical exam.**
- **40 degrees of special endeavor divided into:**
- **5 attendance marks.**
- **5-10 marks for homework with a practical exam.**
- **15 marks written exam.**
- **5 marks oral exam.**

12. Learning and teaching resources

Time Series Analysis Part II Written by Dr. Manaf Yous	**Required textbooks (methodology if any)**

Hamoud And Dr. Ahlam Ahmed Juma Dr. Firas Ahmed Mohammed	
William W.S. Wei(2006) "Time Series Analysis: Univariate and Multivariate Methods" Addison-Wesley Pub.	**Main references (sources)**
James Douglas Hamilton(1994) "Time Series Analysis" Wiley.	**Recommended supporting books and references (scientific journals, reports…)**
	Electronic references, websites

Course Description Form

1.Course name
Statistical Inference 2
2.codeThe decision
43208Inf–Tes
3.the chapter /year
First semester/fourth stage/2025–2026
4.Date preparedDescription
21/9/2025
5.AAvailable attendance forms
My presence
6.Number of study hours (total) / Number of units (total)
3/3
7.Course Instructor Name(If more than one name is mentioned)
Name: Inaam Abdul Rahman Noman Email: inaamsta@uodiyala.edu.iq
8.Course objectives

Course objectives • Introducing the student to the most important principlesReason about statistical hypothesis testing and its importance. • What do you meanStatistical estimates. • What are the steps of statistical analysis based on?Statisti estimates. • What are the methods?Statistical decision making. • Developing the inference method.	**Course objectives**
9. Teaching and learning strategies	
• **Course outcomes, teaching, learning and assessment methods** • **theCognitive objectives** • **The student should know the information about statistical estimates.** • **The student should know the most important basics of statistical inference.** • **The student should know the most important statistical hypothesis testing.** • **The student should know the method of presenting and analyzing data and the most important statistical estimation methods that suit the community being studied.** • **5-The student should know the method of analysis and**	**Strategy**

inference.

- **Skill objectiveshCourse specific**
- **Interactive skills/student interaction with the environment.**
- **Personal skills / ability to diagnose statistical information and its distributions from reality.**
- **Analytical skills / ability to analyze digital information realistically.**
- **Teaching and learning methods**
- **Managing the lecture in a practical manner related to the reality of daily life to attract the student to the subject of the lesson without straying from the core of the subject so that the material is flexible and capable of being understood and analyzed.**
- **Discussion and dialogue**
- **Enrichment questions**
- **Direct interrogation**
- **Evaluation methods**
- **Clarification questions**
- **True or false questions**
- **Duties**
- **Self-assessment**
- **Tests (daily, monthly, quarterly, final)).**
- **Emotional and value goals**
- **Simple thinking: (analyzing the problem in a statistical and mathematical way and finding solutions based on the expected results)**
- **Critical thinking: (the ability to criticize and distinguish between the topics presented and choose between them)**
- **3-Creative thinking: (the ability to produce new ideas and methods of solution).**
- **Teaching and learning methods**
- **Brainstorming method**
- **Use decision making to test the best alternative.**
- **PresentationAnd.**
- **Evaluation methods**
- **Various tests(Daily, monthly, quarterly, final**
- **Oral tests**
- **Duties**
- **General and transferable skills (other skills related to employability and personal development).**
- **Skills in collecting and analyzing information about mathematical concepts and how to use them in the fields of statistics.**

- **Training and personal development skills on how to apply mathematical concepts in different fields.**
- **Developing the student's ability to deal with the Internet..**

10,Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	Week
Self-assessment/tests/oral	Lecture and discussion	Bayes estimation	Bayes estimation	3	1
Self-assessment/tests/oral	Lecture and discussion	Bayes testing application	Bayes testing application	3	2
Self-assessment/tests/oral	Lecture and discussion	Testing hypotheses	Testing hypotheses	3	3
Self-assessment/tests/oral	Lecture and discussion	Simple hypotheses	Simple hypotheses	3	4
Self-assessment/tests/oral	Lecture and discussion	Composite hypotheses	Composite hypotheses	3	5
Self-assessment/tests/oral	Lecture and discussion	Type of error	Type of error	3	6
Self-assessment/tests/oral	Lecture and discussion	Power function	Power function	3	7
Self-assessment/tests/oral	Lecture and discussion/exam	Best critical regression	Best critical regression	3	8
Self-assessment/tests/oral	Lecture and discussion	Generalized likelihood ratio	Generalized likelihood ratio	3	9
Self-assessment/tests/oral	Lecture and discussion	Generalized likelihood ratio	Generalized likelihood ratio	3	10
Self-assessment/tests/oral	Lecture and discussion	Uniformly most powerful test	Uniformly most powerful test	3	11
Self-assessment/tests/oral	Lecture and discussion	Sequential test of hypotheses	Sequential test of hypotheses	3	12
Self-assessment/tests/oral	Lecture and discussion	Application	Application	3	13
Self-assessment/tests/oral	Lecture and discussion	Application	Application	3	14
Self-assessment/tests/oral	Lecture and discussion	Exam	Exam	3	15