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

2024

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: Diyala University

Faculty/Institute: College of Administration and Economy

Scientific Department: Department of Statistics

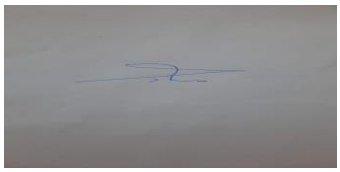
Academic or Professional Program Name: Bachelor of Statistics

Final Certificate Name: Bachelor of Science in Statistics

Academic System: semester

Description Preparation Date: 1/3/2024

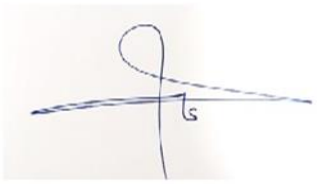
File Completion Date: 15/3/2024



Name of the Department Head:

Prof. Sami Abdullah Ali

Date: 15/3/2024



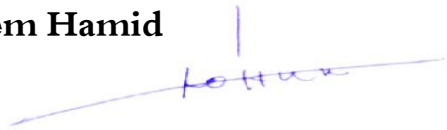
Name of the Scientific Assistant :

Prof . Alia Hussein Khalaf

Date: 15/3/2024

Director of the Quality Assurance and University Performance Department: Assist Prof M. Younis Kazem Hamid

Date: 15/3/2024



Approval of the Dean

Nazar M. AbdulKareem

Date: 15/3/2024

1. Program Vision

Statistics have a continuous impact on our lives and organizations at all times, so we look forward to reaching a statistically and administratively integrated knowledge society in Diyala Governorate.

2. Program Mission

Enriching graduates with various statistical sciences and applying them practically in any general business environment, to reach a knowledge society capable of carrying out administrative work in maintaining the individual (micro) and societal (macro) levels..

3. Program Objectives

• Adopting a scientific methodology in the academic and training fields in accordance with the requirements of quality assurance and academic program accreditation in Iraq.

• Striving to make the department's outputs in statistical sciences more competitive by providing knowledge, skills, and application of the latest models and tests according to available software.

• Conducting scientific research that addresses statistical problems faced by public organizations and society.

• Enabling individuals to manage their businesses efficiently and provide useful and productive knowledge to public organizations and society.

• Conducting scientific research that addresses administrative problems faced by public organizations and society.

• Providing consultations and designing advanced systems that address the problems of public organizations and society.

• Providing government organizations with highly scientific, ethical and professional employees.

• Preparing a workforce prepared to work in the government sector and capable of contributing to the implementation of human development plans for the governorate and the country.

• Developing and developing government agencies in the field of local and central government administration, public budgets and government policies through specialized cadres.

• Working to adopt administrative techniques and mechanize administrative work in various types of government departments and agencies in a way that ensures raising the level of efficiency and effectiveness of these agencies.

4. Program Accreditation

Does the program have program accreditation?

No

5. Other external influences

Is there a sponsor for the program?

No

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	٥	16	13%	
College Requirements	٦	12	10%	
Department Requirements	38	99	٧5%	
Summer Training	1	2	2%	
Other				

* This can include notes whether the course is basic or optional.

7. Program Description

Year/Level	Course Code	Course Name
First	**A1**	Principles of Statistics1 Differentiation Computer Skills 1 Democracy and Human rights Arabic Language Principles of Statistics2 Integration Principles of Administration Principles of Accounting Computer Skills 2 Principles of Economics English language
Second	**A2**	Principles of Probabilities Sampling Techniques The Matrices Series andSequences Quality Control1 Language programing Matlab1 Economic Statistics1 Computer Skills 3 Probability Distribution Survey Statistics Linear Algebra Differential Equation

		Quality Control2
		Language programing Matlab2
		Economic Statistics2
		Arabic Language
Third	**A3**	Mathematical Statistics1
		Regression Analysis1
		Linear Programming
		Data Managemrnt Using spss1
		Biostatistics1
		Demography Analysis1
		Numerical Analysis1
		English Language
		Mathematical Statistics2
		Regression Analysis2
		Operation Research
		Data Managemrnt Using spss2
		Biostatistics2
		Demography Analysis1
		Numerical Analysis2
Furth	**A4**	Inference 1
		Design Experiments1
		Econmetrics1
		Time Series Analysis1
		Statistical Application 1
		Multivarite Analysis1
		Research Ethical Approach
		Inference 2
		Design Experiments2
		Econmetrics2
		Time Series Analysis2
		Statistical Application 2
		Research project

8. Expected learning outcomes of the program

Knowledge	
Learning Outcomes 1	– To know the most important principles and concepts of statistics – – Statement of learning outcomes: 1 Applying statistics tests according to modern programs
Skills	
Learning Outcomes 2	– – The ability to diagnose statistical models and their realistic applications. – – The ability to analyze statistical concepts and the relationships between them
Learning Outcomes 3	– The ability to collect and analyze information about statistics concepts and how to use them in companies. – – Statement of learning outcomes 3 – Familiarity with statistical concepts appropriate for use in different fields
Ethics	
Learning Outcomes 4	– The ability to examine and evaluate the topics presented. – The ability to criticize and distinguish the topics presented and choose between them.
Learning Outcomes 5	– The ability to criticize and distinguish the topics presented and choose between them. – The ability to examine and evaluate the topics presented.

9. Teaching and Learning Strategies

- Applying statistical models and tests

- Use decision making to test the best alternative
- Presentation

10. Evaluation methods

Daily and monthly tests with multiple-choice questions for academic subjects

- Grades for sharing difficult competitive questions for students
- Assigning grades to assigned homework
- Student activities

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
professor						
Assistant Professor					8	
Lecturer					2	
assistant Lecturer					6	

Professional Development

Mentoring new faculty members

By participating in training courses, seminars and workshops on modern teaching methods

Professional development of faculty members
− Follow up on scientific development by contacting international universities via the Internet − Participation in scientific conferences inside and outside the country − Participation in scientific workshops and seminars inside and outside the country

12. Acceptance Criterion

(Establishing regulations related to admission to the college or institute, whether central admission or others mentioned)

Determine a special acceptance rate for graduates of preparatory school in its scientific and literary streams

13. The most important sources of information about the program

- The website of the college and university
- Helping books
- Local scientific trends
- Global scientific requirements

14. Program Development Plan

Curriculum development: By adding modern topics that keep pace with the continuous development in Statistics. Developing and training faculty members: through their participation in seminars, courses, and attendance at scientific conferences for the purpose of being informed of the latest developments.

Program Skills Outline																
				Required program Learning outcomes												
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics				
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	
first	A1	Principles of Statistics	Basic				√			√				√		
	A2	Linear Algebra	Basic				√			√				√		
		Differential Equation	Basic				√			√				√		
	A3	Biostatistics1	Basic				√			√				√		
		Demography Analysis1	Basic				√			√				√		
	A4	Research Ethical Approach	Basic				√			√				√		
		Inference 2	Basic				√			√				√		

- **Please tick the boxes corresponding to the individual program learning outcomes under evaluation.**

Course Description Form

This academic program description provides a summary of the most important characteristics of the program and the learning outcomes that the student is expected to achieve, demonstrating whether he or she has made the most of the opportunities available. It is accompanied by a description of each course within the program

1. Course Name:	
Principles of statistics	
2. Course Code:	
A1	
3. Semester / Year:	
Semester one / first stage	
4. Description Preparation Date:	
١٥/ ٣/ 2023	
5. Teaching and Learning Strategies	
Strategy	Statistics Definition: Statistics is a branch that deals with every aspect of the data. Statistical knowledge helps to choose the proper method of collecting the data and employ those samples in the correct analysis process in order to effectively produce the results. In short, statistics is a crucial process which helps to make the decision based on the data.

6. Course Structure

Course structure(first course).١٠					
Evaluation method	Teaching method	Name of the unit/topic	Required learning outcomes	hours	the week
Self-evaluation/ tests/oral/ enrichment	**Lecture and discussion**	**The emergence and development of statistics**	**Basic concepts/definitions**	**4**	**1**
Self-evaluation/ tests/oral/ enrichment	**Lecture and discussion**	**Collect, classify and tabulate data**	**Data collection**	**4**	**2**
Self-evaluation/ tests/oral/ enrichment	**Lecture and discussion**	**Sample method**	**Inspection**	**4**	**3**
Self-evaluation/ tests/oral/ enrichment	**Lecture and discussion**	**Do the questionnaire**	**The questionnaire**	**4**	**4**
Self-assessment /tests/oral	**Lecture and discussion**	**Classification and tabulation of data**	**Data classification**	**4**	**5**
Self-assessment /tests/oral	**Lecture and discussion**	**Types of frequency distributions and curves**	**Frequency distributions**	**4**	**6**
Self-assessment /tests/oral	**Lecture and discussion**	**Types of random variables and types of error**	**Random variables**	**4**	**7**
Self-assessment /tests/oral	**Lecture and discussion/exam**	**Mathematical symbols and terms/exam**	**Public codes + monthly testing**	**4**	**8**
Self-assessment /tests/oral	**Lecture and discussion**	**Measures of central tendency/arithmetic mean**	**Measurements/characteristics**	**4**	**9**
Self-assessment /tests/oral	**Lecture and discussion**	**Arithmetic/weighted means**	**Measurements and characteristics**	**4**	**10**
Self-assessment /tests/oral	**Lecture and discussion**	**Harmonic/quadratic/geometric**	**Measurements and characteristics**	**4**	**11**
Self-assessment /tests/oral	**Lecture and discussion**	**Loom/advantages and disadvantages**	**Other central measurements**	**4**	**12**
Self-assessment /tests/oral	**Lecture and discussion**	**The medium/advantages and disadvantages**	**Central measurements/others**	**4**	**13**

Self-assessment /tests/oral	Lecture and discussion	Spring and whiskers/exercises	Segmental scales	4	14
Self-assessment /tests/oral	Lecture and discussion	Dispersion measures	The concept of dispersion	4	15
Self-assessment /tests/oral	Lecture and discussion/ then exam	Deviation/variance/dispersion coefficients/monthly examination	Dispersion measures/monthly exam	4	16
Course structure (second course)					
Evaluation method	Teaching method	Name of the unit/topic	Required learning outcomes	hours	the week
Self-assessment /tests/oral	Lecture and discussion	Moments, torsion and splay	Determinations	4	1
Self-assessment /tests/oral	Lecture and discussion	Measures of absolute and relative torsion	skewness	4	2
Self-assessment /tests/oral	Lecture and discussion	Exercises on torsion and flattening	Flatness	4	3
Self-assessment /tests/oral	Lecture and discussion	Linear correlation	The concept of correlation/independent variables and dependent variables	4	4
Self-assessment /tests/oral	Lecture and discussion	Simple linear correlation	The relationship between variables	4	5
Self-assessment /tests/oral	Lecture and discussion	Partial correlation coefficient	Partial link	4	6
Self-assessment /tests/oral	Lecture and discussion	Multiple correlation coefficient	Multiple link	4	7
Self-assessment /tests/oral	Lecture and discussion/ exam	Solve exercises/exams	Solve exercises/exams	4	8
Self-assessment /tests/oral	Lecture and discussion/	Correlation coefficient of ranks and traits	Rank correlation	4	9
Self-assessment /tests/oral	Lecture and discussion	The concept of simple linear regression	The concept of regression	4	10
Self-assessment /tests/oral	Lecture and discussion	Multiple regression/two variables	Multiple regression	4	11
Self-assessment /tests/oral	Lecture and discussion	Comparison between simple and multiple linear regression	Applied comparison in regression	4	12

Self-assessment /tests/oral	**Lecture and discussion**	**The concept of probability/general rules**	**Introduction to probability theory**	**4**	**13**
Self-assessment /tests/oral	**Lecture and discussion**	**Introduction to some probability distributions**	**Probability distributions**	**4**	**14**
Self-assessment /tests/oral	**Lecture and discussion**	**The concept of significance testing**	**Significance test**	**4**	**15**
Self-assessment /tests/oral	**Lecture and discussion/ exam**	**Solve exercises/exams**	**Solve exercises/exams**	**4**	**16**

7. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

8. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

9. Course Name:	
Principles of Accounting1	
10. Course Code:	
A1	
11. Semester / Year:	
Semester one / first stage	
12. Description Preparation Date:	
١٥/ ٣/ 2023	
13.Available Attendance Forms:	
Attendance	
14. Course Objectives	
Course Objectives	Introducing the student to the most important foundations and principles of public administration. • Introducing the student to the main administrative functions and the organization's main and secondary functions. • Explaining the development of administrative sciences and their historical sequence. • Explaining the importance of public administration science and its role in organizations. • Providing the student with various topics about public administration that form a knowledge base for him about administration and its applications in organizations.
15. Teaching and Learning Strategies	
Strategy	Power point lecture method using data show and whiteboard. Explanation and clarification. Forming discussion groups during lectures to discuss inorganic chemistry topics that require thinking and analysis. Asking students a set of thinking questions during the lectures such as what, how, when and why for specific topics. Giving students homework that requires self-explanations in causal ways.

16. Course Evaluation
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

Course Description Form

17. Course Name:	
Surveys and sampling methods	
Course Objectiv	This course description provides a summary of the most important characteristics of the course and the learning outcomes that the student is expected to achieve, demonstrating whether he or she has made the most of the opportunities.LearningAvailable. It must be linked to the program description.;
18.	

19 .Course structure(Chapter One)

Evaluation method	Teaching method	Name of the unit/course or subject	Required learning outcomes	hours	the week
Self-evaluation and peer evaluation	Discussion	review		2	
				3	
Schiff testswith	lecture	Introduction, definitions and terms,	introduction	5	2
				6	
Self-evaluation and peer evaluation Peer and Self-Assessment	Discussion and dialogue	Simple random sampling: introduction, selecting a simple		8	
Schiff testswith OrallyTests	Power point Presentation			9	
HomeworksHomework assignments	lecture	Confidence limits, proportion		11	
Self-evaluation and peer evaluation Peer and Self-Assessment	Discussion and dialogue			12	
		Bias in estimating the		14	
				15	
		Preview of ratios: introduction,		17	
				18	
HomeworksHomework	Discussion	Confidence limits,		20	
				21	
	----------	Estimating sample size: Determining the		23	
Closed-book Exam				24	
		Estimating sample		26	
				27	
Self-evaluation and peer evaluation	Discussion and dialogue	Estimating sample size: Determining the	Examples and exercises	29	10

Peer and Self-Assessment		**sample size to estimate the total population, examples, exercises**		30	
		Estimating sample size: Determining the		32	
				33	
		Estimating sample size: Determining the		35	
				36	
		Estimating the sample size:		38	
				39	
		Estimating the sample size:		41	
				42	
Closed book Exam	----------	**Exam**	----------	44	15
				45	

Course Description Form

19. Course Name:	
Linear Algebra	
20. Course Code:	
21. Semester / Year:	
Semester two/ second stage /2023-2024	
22. Description Preparation Date:	
١٥/ ٣/ 2024	
23.Available Attendance Forms:	
Attendance	
24.Number of Credit Hours (Total) / Number of Units (Total)	
3/3	
25. Course administrator's name (mention all, if more than one name)	
Name: Assist. Lecturer Amal Hadi Rashid Email: amal@uodiyala.edu.iq	
26. Course Objectives	
Course Objectives	**The linear algebra course aims to provide knowledge and awareness of mathematical methods, understanding the use of matrices, performing all primary operations, and types of matrices and vectors in solving various statistical models**.
27. Teaching and Learning Strategies	
Strategy	A- Knowledge and Understanding 1- Ability to use statistical theory 2- Providing the student with the ability to formulate realistic problems in the form of matrices and vectors. B- Subject-specific skills 1- Skills in employing and using statistical tools 2- The student's familiarity with some applications of linear algebra in advanced statistical topics

28. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	3	Knowledge and understanding	Primary operations and inverse primary operations.	Board and interactive whiteboard	- Daily exams - Homework - Monthly exams
2	3	Learn mathematically about the meaning of equivalence and how to use it	Equivalence Matrix	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
3	3	Use these formulas to find the rank of a matrix	The matrix form and the natural form	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
4	3	Learn about some types of matrices and how to benefit from them in other topics	Prime matrices	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
5	3	Simplifying mathematical operations and how to formulate them mathematically in the form of a matrix	Linear equations	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
6	3	Simplifying mathematica operations and how to formulate them mathematically in the for of a matrix	Methods for solving linear equations	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
7	3	Understanding mathematical concepts related to the subject	Vectors	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
8		Simplifying mathematical operations and how to formulate them in the form of a matrix	Supported vectors	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
9	٣	How to deal with realistic issues	Linear compositions	Board and interactive whiteboard	- Daily exams - Homework Monthly exams

10	٣	Simplifying mathematical operations and how to formulate them in the form of a matrix	Solve questions	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
11	٣	w to deal with realistic issues	Latent roots	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
12	3	Application of matrices in advanced statistical topics	Linear models	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
13	3	Application of matrices in advanced statistical topics	Solve questions	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
14	3	Application of matrices in advanced statistical topics	Conditional distributions Application of matrices in advanced statistical topics	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
15	3	Application of matrices in advanced statistical topics	Final EXAM	Board and interactive whiteboard	- Daily exams - Homework Monthly exams

Course Description Form

29.	Course Name:

Differentiate	
30. Course Code:	
31. Semester / Year:	
Semester one / first stage /2023-2024	
32. Description Preparation Date:	
١٥/ ٣/ 2024	
33.Available Attendance Forms:	
Attendance	
34.Number of Credit Hours (Total) / Number of Units (Total)	
3/3	
35. Course administrator's name (mention all, if more than one name)	
Name: Assist. Lecturer Amal Hadi Rashid Email: amal@uodiyala.edu.iq	
36. Course Objectives	
Course Objectives	**Course Objectives:** **- Introducing students to the important principles and concepts of mathematics.** **- Clarifying the concept of sets and function plots.** **- Highlighting the importance of domain and range in understanding the shape of a function.** **- This course aims to study derivatives and their applications, enabling students to apply derivative rules in finding intervals of increase and decrease and graphing functions.**
37. Teaching and Learning Strategies	
Strategy	Outputs of the course and teaching methods and assessment 1- Cognitive objectives: Making the student capable of 2- - Knowing the most important principles and basic concepts in mathematics 3- - Identifying types of functions and relationships on functions 4- Understanding the concept of derivative and derivative laws 5- Expressing his opinion on mathematical concepts 6- Applying mathematical concepts with realistic examples and

	case studies Special skills objectives of the course 1- Interactive skills: Ability to communicate with the course instructor and peers 2- Diagnostic skills: Ability to diagnose functions and their real-life applications 3- Scientific reports. Teaching and learning methods 1- Managing the lecture in an applied manner related to daily life to attract the student to the lesson topic without deviating from the essence of the subject to make the material flexible, understandable, and analyzable 2- Discussion and dialogue 3- Enrichment questions 4- Direct interrogation Assessment methods 1- Clarification questions 2- True/false questions 3- Assignments 4- Self-assessment 5- Tests (daily, monthly, quarterly, final). Emotional and Moral Objectives: 1- Simple Thinking: (Analyzing the problem statistically and finding solutions based on expected results) 2- Critical Thinking: (Ability to critique and distinguish between presented topics and choose among them) 3- Creative Thinking: (Ability to produce new ideas and methods in solving problems)

	Teaching and Learning Methods: 1- Brainstorming method 2- Using decision-making to test the best alternative 3- Presentation method Evaluation Methods: - Various tests (daily, monthly, quarterly, final) 2- Oral tests 3- Assignments General and Transferable Skills (Other skills related to employability and personal development): 1- Skills in gathering and analyzing information about mathematical concepts and how to use them in statistical fields 2- Training and personal development skills on how to apply mathematical concepts in different fields 3- Developing the student's ability to deal with the internet.

38. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Students should be able to understand some basic concepts such as the function and the domain and the range of function, while giving examples.	Basic Concepts (Function, Domain, Codomain, Range	Board and interactive whiteboard	- Daily exams - Homework - Monthly exams
2	3	The ability to distinguish the type of function	Types of functions	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
3	3	The derivative's definition	The Derivative		

4	3	The basic rules of derivation	Basic Rules Chain Rule	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
5	3	Derivation mechanisms: Chain rule	Implicit Differentiati	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
6	3	Derivation Mechanisms Implicit Derivation	Derivative of Logarithmic Functions Derivative of Exponential Functions	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
7	3	The ability to derive trigonometric function inverse trigonometric functions, and hyperbol functions	Derivative of Trigonometric Functions Derivative of Inverse Trigonometric Functions EXAM	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
8		Derivation from higher degrees and finding maximum and minimum values and turning points.	Derivative of Hyperbolic Functions	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
9	٣	Partial derivative and total derivative	Derivative of Higher Order	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
10	٣	Students must be able to communicate effectively, whether through writing statistical reports or presenting homework solutions.	Chapter Two: Maximum and Minimum Points	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
11	٣	Understanding an knowledge	Maximization and Minimization	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
12	3	Understanding and knowledge	Chapter Three: Partial Derivative	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
13	3	Understanding and knowledge	Total Derivative Partial Derivative Applications	Board and interactive whiteboard	- Daily exams - Homework Monthly exams

14	3	Understanding and knowledge	Types of functions	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
15	3	Understanding and knowledge	Final EXAM	Board and interactive whiteboard	- Daily exams - Homework Monthly exams

Course Description Form

39. Course Name:	
Time series analysis 2	
40. Course Code:	
41. Semester / Year:	
Semester two/ four stage /2023-2024	
42. Description Preparation Date:	
١٥/ 3/ 2024	
43. Available Attendance Forms:	
Attendance	
44. Number of Credit Hours (Total) / Number of Units (Total)	
3/2.5	
45. Course administrator's name (mention all, if more than one name)	
Name: Assist. Lecturer Amal Hadi Rashid Email: amal@uodiyala.edu.iq	
46. Course Objectives	
Course Objectives	**Course Objectives: In most areas of life, including industrial and economic changes, as well as demographic and medical changes, we need statistical methods and methods in order to analyze and treat phenomena, as well as predict through them the future, as time series analysis is considered one of the most important statistical methods that can be integrated with various fields, especially the economic field, as it is used in Determine the general trend of time series data as well as... That is why this article aims to** **Identifying the most important basic components of time series, including identifying statistical models such as autoregressive models and ordinary, seasonal, and multiplicative ARIMA moving averages. Therefore, this material aims to** **1- Identify the nature of stable and unstable time series due to poor stability in the arithmetic mean or variance** **Autocorrelation functions and treatment methods for unstable chains** **2- Methods of diagnosing, estimating and testing seasonal and non-seasonal Box-Jenkins models and the multiplicative**

	model. **3- Testing the suitability of the model for time series** **4- Methods of comparison between the models under study.** **5- Internal and external forecasting based on optimal models for use in economic and social planning, for the purposes of statistical comparison, and in time series analysis.**
47.	Teaching and Learning Strategies
Strategy	Knowledge and understanding - Ability to analyze data. - Providing students with applied statistical knowledge in various fields of life, such as social, economic, and others - The student's ability to estimate data, forecast, and utilize it for planning purposes. - The student will understand the concept of analysis and benefit from it in his practical life in the future. Subject-specific skills - Employing skills by using appropriate statistical analysis of data, through looking at real data - Skills to make future predictions and make an appropriate decision based on principles Sound scientific Teaching and learning methods Giving lectures and giving continuous and applied exercises on various phenomena, such as economic, physical, and others, to learn the application of statistics in various fields. - Organizing group discussions on time series analysis, which contributes to the exchange of ideas and mutual learning among students. Evaluation methods Periodic exams and discussions on the lecture topic thinking skills

	- Thinking and listening to the question. - Understand the question. - Focus on the requirements of the question. - Accurate and scientific answer to the requirements of the question

48. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	3	Knowledge and understanding	Double exponential smoothing - Brown's method - Holt method	Board and interactive whiteboard	- Daily exams - Homework - Monthly exams
2	3	Mental skills	- Triple exponential smoothing method (Winter method) - Case studies using statistical programs for practical application	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
3	3	Knowledge and understanding	Time series extrapolation -Stability in the arithmetic mean - Stability in contrast	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
4	3	Mental skills	Time series extrapolation -Stability in the arithmetic mean - Stability in contras	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
5	3	Knowledge and understanding	- Box-Jenkins mode analysis - Random model (stable and unstable)	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
6	3	Mental skills	- Stages of building	Board	- Daily exams

			model - Diagnosis - Autoregressive mo - Moving average model - Simple mixed mod	and interactiv e whiteboa rd	- Homework Monthly exams
7	3	Knowledge and understanding	- Using the autocorrelation function and the partial autocorrelation function in diagnosis - Methodological methods for analyzing time series data - Autocorrelation coefficient - Autocorrelation coefficient test	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
8		Mental skills	- Box-Jenkins method for time series analysis - Model diagnosis - P-score autoregressive model - Model of moving circles of degree q - Autoregressive model for moving media of degree (p, q)	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
9	٣	Knowledge and understanding	Estimation using the method of moments and the maximum likelihood method - Seasonal autoregressive model - Seasonal moving averages model	Board and interactive whiteboard	- Daily exams - Homework Monthly exams

			Unstationary seasonal mixed model		
10	٣	Mental skills	Estimation using the method of moments and the maximum likelihood method	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
11	٣	owledge and understanding	- Seasonal autoregressive mode - Seasonal moving averages model Unstationary season mixed model	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
12	3	Mental skills	- Checking the suitability of the model - Price test - Ljung Box test	Board and interactiv e whiteboa rd	- Daily exams - Homework Monthly exams
13	3	Knowledge and understanding	- Multiplicative seasonal model - Estimating parameter	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
14	3	Mental skills	- Forecasting with ARIMA models. Case studies using statistical program	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
15	3	Knowledge and understanding	Final EXAM	Board and interactive whiteboard	- Daily exams - Homework Monthly exams

49. Course Evaluation

Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.
1- 50 marks for a final written exam, with 10 marks for a final practical exam.
1. 40 degrees related to the pursuit, divided into:
A) 5 attendance marks.
b) 5-10 grades of assignments with a practical exam.
T) 15 marks for written exam.
d) 5 marks for oral exam..

50. Learning and Teaching Resources	
Required textbooks (curricular books, 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 books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

51. Course Name:	
Time series analysis 1	
52. Course Code:	
53. Semester / Year:	
Semester one/ four stage /2023-2024	
54. Description Preparation Date:	
١٥/ ٣/ 2024	
55.Available Attendance Forms:	
Attendance	
56.Number of Credit Hours (Total) / Number of Units (Total)	
3/2.5	
57. Course administrator's name (mention all, if more than one name)	
Name: Assist. Lecturer Amal Hadi Rashid Email: amal@uodiyala.edu.iq	
58. Course Objectives	
Course Objectives	**Course Objectives: In most areas of life, including industrial and economic changes, as well as demographic and medical changes, we need statistical methods and methods in order to analyze and treat phenomena, as well as predict through them the future, as time series analysis is considered one of the most important statistical methods that can be integrated with various fields, especially the economic field, as it is used in Determine the general trend of time series data as well as periodic and seasonal changes, in addition to irregular and random changes that are related to the occurrence of unexpected developments such as the occurrence of natural or health disasters or wars and disturbances... That is why this article aims to** **Identify the most important basic components of the time series** **1- Method for estimating the basic components of the time series and the final models.** **2- Statistical analysis of time series using statistical programs.** **3- How to know the stability of time series.** **4- Methods of comparison between models.** **5- Internal and external forecasting based on the base year.**

59.	Teaching and Learning Strategies
Strategy	Knowledge and understanding - The ability to analyze data using statistical programs. - Providing students with applied statistical knowledge in various fields of life, such as social, economic, and others - The student's ability to estimate data, forecast, and utilize it for planning purposes. - The student will understand the concept of analysis and benefit from it in his practical life in the future. Subject-specific skills - Employing skills by using appropriate statistical analysis of data, through looking at real data - Skills to make future predictions and make an appropriate decision based on foundations Sound scientific Teaching and learning methods Giving lectures and giving continuous and applied exercises on various phenomena, such as economic, demographic, and others, to learn the application of statistics in various fields. - Organizing group discussions about analyzing 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 - Thinking and listening to the question. - Understand the question. - Focus on the requirements of the question. - Accurate and scientific answer to the requirements of the

	question

60. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	3	Knowledge and understanding	The concept of time series, the concept of forecasting and its types.	Board and interactive whiteboard	- Daily exams - Homework - Monthly exams
2	3	Mental skills	- Patterns of data appearance - Data types for time series.	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
3	3	Knowledge and understanding	- The most important metrics used in quantitative forecasting - General concepts for forecasting using time series.	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
4	3	Mental skills	Accuracy of forecasting methods - Auto variance function - Autocorrelation function - Properties of the autocorrelation function - Partial autocorrelation function - Autocorrelation function of the sample - Partial	Board and interactive whiteboard	- Daily exams - Homework Monthly exams

			autocorrelation function for the sam		
5	3	Knowledge and understanding	- Case studies using statistical programs	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
6	3	Mental skills	Types of models in analysis methods - Methods of time series analysis Aggregate model With practical application	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
7	3	Knowledge and understanding	General direction vehicle and ways to find it	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
8		Mental skills	General direction vehicle and ways to find it	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
9	٣	Knowledge and understanding	Season vehicle and ways to find it	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
10	٣	Mental skills	Periodic and occasional changes - Find two components of the time series -Drawing method - Direction vehicle Semi-averages method With practical application	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
11	٣	owledge and understanding	- Case studies using statistical programs	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
12	3	Mental skills	Least squares method - Moving media method	Board and interactive	- Daily exams - Homework Monthly exams

			- Central moving circles method	whiteboard	
13	3	Knowledge and understanding	Excluding the effect of the general trend - Seasonal changes - Methods of calculating the seasonal index	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
14	3	Mental skills	Averages method - Method of ratio to moving media - Singular exponential smoothing - practical application	Board and interactive whiteboard	- Daily exams - Homework Monthly exams
15	3	Knowledge and understanding	Final EXAM	Board and interactive whiteboard	- Daily exams - Homework Monthly exams

61. Course Evaluation

Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.
1- 50 marks for a final written exam, with 10 marks for a final practical exam.
1. 40 degrees related to the pursuit, divided into:
A) 5 attendance marks.
b) 5-10 grades of assignments with a practical exam.
T) 15 marks for written exam.
d) 5 marks for oral exam..

62. Learning and Teaching Resources

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Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	