

University of Mosul جامعة الموصل



First Cycle – Bachelor's degree (B.Sc.) – Statistics and Informatics
بكالوريوس – علوم في الإحصاء والمعلوماتية



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1. **Mission & Vision Statement**

Vision Statement

Our vision is to be a leading department in the fields of statistics and informatics, recognized for our excellence in education, research, and community engagement. We strive to produce highly skilled graduates equipped with strong analytical and computational abilities, who can make significant contributions to academia, industry, and society. Through innovative research, we aim to advance the frontiers of statistical theory, data analysis, and information systems, addressing complex challenges and driving positive societal impact. We are committed to fostering interdisciplinary collaborations, promoting ethical and responsible data practices, and empowering individuals and organizations with data-driven insights. Our department seeks to be a hub of expertise, innovation, and intellectual exchange, shaping the future of statistics and informatics through cutting-edge research, transformative education, and meaningful partnerships.

Mission Statement

The Department of Statistics and Informatics at the University of Mosul is dedicated to providing quality education and training in the fields of statistics and informatics. With a mission to empower students with essential knowledge and skills, the department aims to prepare them for successful careers in these disciplines. Through innovative research, the department strives to advance knowledge in statistics and informatics, contributing to academic scholarship and addressing relevant societal challenges. By fostering collaborations with other institutions and engaging with the community, the department seeks to promote interdisciplinary research and apply statistical and informatics expertise to real-world problems. Additionally, the department emphasizes the

professional development of its faculty and staff, ensuring they stay at the forefront of advancements in the field.

2. Program Specification

Program code:	BSc-STAT	ECTS	240
Duration:	4 levels, 8 Semesters	Method of Attendance:	Full Time

Statistics is a comprehensive field that holds great significance across various disciplines. The BSc in Statistics program emphasizes the application of statistical methods to analyze and interpret data, providing students with a solid foundation in this field. The program is designed to cater to a wide range of interests, allowing students to pursue specialization or explore diverse areas of statistics.

In the first year (Level 1), students are introduced to the fundamental concepts and principles of statistics. These core topics lay the groundwork for progression into specialized modules at higher levels. The program offers a seamless transition for students who wish to pursue further studies in specialized areas of statistics, such as biostatistics or data science.

At Levels 2, 3, and 4, students have the freedom to choose more than half of their module credits, while ensuring a well-rounded understanding of statistical theory and its practical applications. This flexibility allows students to explore various domains, including mathematical statistics, regression analysis, experimental design, and multivariate analysis. The program aims to develop students' analytical and problem-solving skills by offering a wide array of module choices.

The research ethos is embedded throughout the program, starting from Level 1. Practical sessions, integrated within lecture modules or offered as dedicated practical modules, provide hands-on experience with statistical analysis and research methods. Research seminars and tutorials further foster the research mindset among students. In the final year (Level 4), all students undertake an independent research project, which can involve data analysis, library research, or data collection.

Academic tutorials are held at Levels 1 and 2, providing continuity and guidance for students. The personal tutor, who remains the same throughout these levels, assists students in their academic journey. These tutorials include workshops on essential skills like data manipulation, statistical software usage, and effective communication of statistical findings. Students are evaluated through assessed exercises, such as essays and presentations, to apply these skills in a statistical context.

Overall, the BSc in Statistics program equips graduates with a strong foundation in statistical theory, practical skills, and research techniques. It prepares students for various career paths, including data analysis, research, finance, and consultancy, as well as offering a solid basis for further academic pursuits in statistics or related disciplines.

3. Program Objectives

1. **Foundational Knowledge:** Provide students with a solid foundation in statistical theory, mathematical principles, and computer science fundamentals, enabling them to understand the core concepts and methodologies in statistics and informatics.
2. **Statistical Analysis:** Develop students' skills in data collection, organization, analysis, and interpretation using statistical techniques and software tools, such as SPSS and Minitab. Students should be able to apply appropriate statistical methods to address real-world problems and draw meaningful conclusions from data.
3. **Information Systems:** Equip students with a comprehensive understanding of information systems, including database management, data collection, data modeling, and data visualization.
4. **Programming Skills:** Develop students' programming abilities in languages commonly used in statistical and informatics applications, such as R and MATLAB. Students should be proficient in writing code, automating tasks, and manipulating data to support statistical analysis and information systems development.
5. **Analytical Thinking:** Foster students' analytical thinking skills to approach complex problems, make informed decisions, and critically evaluate statistical and informatics methodologies. Students should be able to identify and solve problems using logical reasoning and quantitative analysis.
6. **Communication and Collaboration:** Enhance students' communication and collaboration skills to effectively present and communicate statistical findings and work in interdisciplinary teams. Students should be able to articulate technical concepts to diverse audiences and engage in collaborative projects.
7. **Ethical Considerations:** Cultivate an understanding of ethical and legal issues related to data collection, storage, analysis, and dissemination. Students should demonstrate ethical behavior and awareness of privacy, data protection, and intellectual property rights in statistical and informatics applications.
8. **Professional Development:** Foster students' professional growth by exposing them to current industry practices, emerging technologies, and career opportunities in statistics and informatics. Students should be prepared for further studies or entry-level positions in data analysis, information systems, research, or related fields.

4. Student Learning Outcomes

Statistics is a branch of mathematics and a scientific discipline that involves collecting, analyzing, interpreting, presenting, and organizing data. It deals with the collection, organization, and

interpretation of numerical data to gain insights, make informed decisions, and draw conclusions about a population or a phenomenon.

The primary goal of statistics is to extract meaningful information from data, uncover patterns, relationships, and trends, and make inferences or predictions about larger populations based on sample data. It provides methods and tools for summarizing data, measuring variability, testing hypotheses, and making statistical inferences.

Statistics encompasses a wide range of techniques and methodologies, including descriptive statistics, inferential statistics, probability theory, statistical modeling, experimental design, hypothesis testing, regression analysis, time series analysis, and multivariate analysis.

Statistics plays a crucial role in various fields, including social sciences, business and economics, healthcare, engineering, environmental sciences, and many more. It helps researchers, professionals, and decision-makers to make evidence-based decisions, evaluate the effectiveness of interventions or policies, analyze survey data, conduct experiments, and understand and quantify uncertainty.

Outcome 1

Knowledge of Statistical Concepts:

- Demonstrate a solid understanding of fundamental statistical concepts, including probability theory, hypothesis testing, regression analysis, and sampling techniques.
- Apply statistical techniques to analyze data, interpret results, and draw meaningful conclusions.

Outcome 2

Proficiency in Data Analysis:

- Collect, clean, and preprocess data using appropriate techniques.
- Apply statistical software and programming languages to perform data analysis, visualize data, and generate reports.
- Select and apply appropriate statistical models and methods to address research questions or real-world problems.

Outcome 3

Programming and Technical Skills:

- Demonstrate proficiency in programming languages commonly used in statistical and informatics applications, such as R and MATLAB.
- Write efficient code to automate tasks, manipulate data, and implement statistical algorithms.

Outcome 4

Analytical and Critical Thinking:

- Apply analytical and critical thinking skills to formulate and solve complex problems in statistics and informatics.
- Evaluate and interpret statistical findings, identify limitations, and propose appropriate solutions.
- Analyze data and identify patterns, trends, and insights to support decision-making processes.

Outcome 5

Effective Communication:

- Communicate statistical concepts, analysis methods, and findings to both technical and non-technical audiences.
- Present information clearly and effectively using visualizations, reports, and presentations.
- Collaborate effectively in interdisciplinary teams, demonstrating strong communication and teamwork skills.

Outcome 6

Ethical and Professional Conduct:

- Demonstrate awareness of ethical issues related to data privacy, confidentiality, and intellectual property.
- Adhere to ethical guidelines and professional standards in statistical analysis and informatics practices.
- Embrace lifelong learning and stay updated with emerging trends and technologies in the field.

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6. Credits, Grading and GPA

Credits

University of Mosul is following the Bologna Process with the European Credit Transfer System (ECTS) credit system. The total degree program number of ECTS is 240, 30 ECTS per semester. 1 ECTS is equivalent to 25 hrs student workload, including structured and unstructured workload.

Grading

Before the evaluation, the results are divided into two subgroups: pass and fail. Therefore, the results are independent of the students who failed a course. The grading system is defined as follows:

GRADING SCHEME مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 - 49)	FX – Fail	راسب - قيد المعالجة	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				
Number Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Calculation of the Cumulative Grade Point Average (CGPA)

1. The CGPA is calculated by the summation of each module score multiplied by its ECTS, all are divided by the program total ECTS.

CGPA of a 4-year B.Sc. degree:

$$\text{CGPA} = [(1^{\text{st}} \text{ module score} \times \text{ECTS}) + (2^{\text{nd}} \text{ module score} \times \text{ECTS}) + \dots] / 240$$

7. Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
STAT101	Elementary Statistics I	93	82	7.00	C	
STAT102	Calculus I	93	82	7.00	B	
STAT103	Basic Programming	63	87	6.00	B	
STAT104	Linear Algebra	63	87	6.00	B	
STAT105	Human rights	33	17	2.00	S	
STAT106	Arabic Language	33	17	2.00	S	

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
STAT107	Elementary Statistics II	93	82	7.00	C	
STAT108	Calculus II	93	82	7.00	B	
STAT109	Information Technology	63	87	6.00	B	
STAT110	MATLAB programming	63	87	6.00	B	
STAT111	English Language	33	17	2.00	S	
STAT112	Democracy	33	17	2.00	S	

Semester 3 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
STAT201	Probability I	93	82	7.00	C	
STAT202	Sampling Theory I	78	72	6.00	C	
STAT203	Numerical Analysis I	63	62	5.00	B	Calculus I, Calculus II
STAT204	Calculus III	63	62	5.00	B	Calculus I, Calculus II
STAT205	Demography	63	62	5.00	C	
STAT206	English Language	33	17	2.00	S	

Semester 4 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
STAT207	Probability II	93	82	7.00	C	
STAT208	Sampling Theory II	78	72	6.00	C	
STAT209	Numerical Analysis II	63	62	5.00	E	Calculus I, Calculus II
STAT210	Data Base	63	62	5.00	B	
STAT211	Time Series Analysis	63	62	5.00	C	
STAT212	Research Methodology	33	17	2.00	S	

Semester 5 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
STAT301	Mathematical Statistics I	78	97	7.00	C	
STAT302	Regression Analysis I	78	72	6.00	C	Linear Algebra, Probability I, Probability II
STAT303	Operation Research	63	62	5.00	B	
STAT304	Data Mining	63	62	5.00	C	
STAT305	Hypothesis Testing	48	52	4.00	C	
STAT306	Computer Applications	63	12	3.00	B	

Semester 6 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
STAT307	Mathematical Statistics II	78	97	7.00	C	
STAT308	Regression Analysis II	78	72	6.00	C	Linear Algebra, Probability I, Probability II
STAT309	Biostatistics	78	72	6.00	C	
STAT310	Quality and Reliability	63	62	5.00	C	
STAT311	Statistical Learning	63	37	4.00	B	
STAT312	English Language	33	17	2.00	S	

Semester 7 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
STAT401	Stochastic Processes I	78	97	7.00	C	
STAT402	Statistical Inference I	78	97	7.00	C	
STAT403	Multivariate Analysis	63	62	5.00	C	
STAT404	Computational Statistics	63	62	5.00	B	
STAT405	Design and Analysis of Experiments I	48	52	4.00	C	
STAT406	English Language	33	17	2.00	S	

Semester 8 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
STAT407	Stochastic Processes II	78	97	7.00	C	
STAT408	Statistical Inference II	78	97	7.00	C	
STAT409	Statistical Modeling	63	62	5.00	C	Regression Analysis I, Regression Analysis II
STAT410	Non-parametric Statistics	63	62	5.00	C	
STAT411	Design and Analysis of Experiments II	48	52	4.00	C	
STAT412	Project	33	17	2.00	B	

8. Contact

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