University of Baghdad
جامعة بغداد

First Cycle – Bachelor's Degree (B.Sc.) – Remote Sensing & GIS

بكالوريوس – تحسس نائي ونظم معلومات جغرافية

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1. Mission & Vision Statement

Mission:

To provide students with a strong foundation in the theories, methods, and techniques of remote sensing, GIS, and GPS technologies and their applications. The program aims to cultivate future professionals and leaders in the geospatial industry and prepare them for careers in geospatial data acquisition and analysis, remote sensing, environmental monitoring, and spatial data management.

Vision:

The vision of the Remote Sensing and GIS program is to:

- Establish itself as a premier geospatial science program that excels in remote sensing, GIS, and spatial analysis education.
- Remain at the cutting edge of advancements in geospatial technologies and their applications.
- Produce graduates and future leaders who can address critical challenges at the intersection of remote sensing, GIS, and environmental sciences.
- Foster partnerships with industry, government, and non-profit organizations to align curriculum and research with current and future workforce needs.
- Encourage innovation in interdisciplinary research in geospatial science and its applications in natural resource management, sustainable development, climate change modeling, and environmental protection.
- Provide access to state-of-the-art geospatial resources, tools, datasets, and computing infrastructure for experiential learning and research.
- Build lifelong learning opportunities and continuing education in geospatial technologies for students, professionals, and the community.

The vision is to establish the program as a leader in remote sensing and GIS education, produce work-ready graduates, and engage in research and partnerships that address global challenges using geospatial tools and techniques. The program aims to provide access to cutting-edge resources and promote lifelong learning in this field.

2. Program Specification

Programme code:	BSc-BIO	**ECTS**	240
Duration:	4 levels, 8 Semesters	**Method of Attendance:**	Full Time

A Bachelor of Science (B.Sc.) degree program in Remote Sensing and Geographic Information Systems (GIS) typically provides students with a comprehensive understanding of the principles and applications of remote sensing and GIS technologies. The program combines theoretical knowledge with practical skills to enable students to analyze, interpret and manage spatial data effectively.

The program usually takes four years to complete and involves coursework, laboratory exercises, and fieldwork. The specific courses and requirements may vary depending on the institution offering the program, but the following are some of the common features of a B.Sc. in Remote Sensing and GIS:

1. Core Courses: These courses provide students with a foundation in the fundamental principles of remote sensing and GIS. Topics covered may include cartography, spatial analysis, data visualization, remote sensing data acquisition and processing, image analysis, and GIS data management.
3. Elective Courses: Students are often allowed to choose from a range of elective courses to tailor their education to their areas of interest. These courses may include topics such as environmental modeling, geostatistics, database design, and web GIS.
4. Laboratory Exercises: Laboratory exercises are essential in developing practical skills. Students work with software and hardware tools to manipulate and analyze spatial data. They also learn how to use equipment such as GPS, drones, and remote sensing sensors.
5. Fieldwork: Fieldwork is an important aspect of the program, as it exposes students to real-world scenarios and helps them understand how to apply their theoretical knowledge in practical situations. Fieldwork may involve collecting data, conducting surveys, or analyzing existing spatial datasets.
6. Capstone Project: In their final year, students may be required to undertake a capstone project that allows them to apply their knowledge and skills to a real-world problem. The project may involve designing a GIS database, developing a remote sensing application, or conducting a spatial analysis of a specific area.

Graduates of a B.Sc. in Remote Sensing and GIS program are typically well-prepared for careers in a range of fields, including environmental management, urban planning, natural resource management, and disaster response. They can also pursue further studies in related fields such as geography, geology, or environmental science.

7. Program Objectives

The primary objectives and goals of a Bachelor's Degree (B.Sc.) program in Remote Sensing and GIS are to provide students with a comprehensive understanding of the principles, techniques, and applications of remote sensing and GIS technologies. The specific objectives and goals of the program may include:

1. Providing students with a fundamental understanding of the principles and theories that underpin remote sensing and GIS technologies.
2. Equipping students with practical skills that enable them to collect, analyze, and interpret spatial data using remote sensing and GIS tools and techniques.
3. Developing students' abilities to design, develop, and manage spatial databases and GIS applications.
4. Providing students with fieldwork and hands-on experience to develop their practical skills and expose them to real-world scenarios.

5. Preparing students for careers in a range of fields that require knowledge and skills in remote sensing and GIS, such as environmental management, urban planning, natural resource management, and disaster response.
6. Encouraging students to think critically and creatively to solve complex spatial problems using remote sensing and GIS technologies.
8. Fostering collaboration and teamwork skills that enable students to work effectively with others on spatial projects.
9. Providing opportunities for students to develop their communication skills through written and oral presentations of their work.

Overall, the objectives and goals of a B.Sc. program in Remote Sensing and GIS are to produce graduates who are well-equipped with the knowledge, skills, and practical experience to apply remote sensing and GIS technologies to solve spatial problems in a range of fields.

10. Student Learning Outcomes

The student learning outcomes for a Bachelor's Degree (B.Sc.) program in Remote Sensing and GIS may vary depending on the institution offering the program. However, some common student learning outcomes for the program are:

1. Ability to understand the principles and theories that underpin remote sensing and GIS technologies.
2. Ability to collect, process, analyze, and interpret spatial data using remote sensing and GIS tools and techniques.
3. Ability to design, develop, and manage spatial databases and GIS applications.
4. Ability to apply remote sensing and GIS technologies to solve complex spatial problems in a range of fields, including environmental management, urban planning, natural resource management, and disaster response.
5. Ability to communicate effectively using written and oral presentations to convey spatial information and analysis.
6. Ability to work collaboratively in teams on spatial projects.
7. Ability to think critically and creatively to solve spatial problems using remote sensing and GIS technologies.
8. Ability to use fieldwork and hands-on experience to develop practical skills and exposure to real-world scenarios.
9. Knowledge of ethical considerations related to remote sensing and GIS, including issues of data privacy, data ownership, and data access.
11. Ability to continue learning and staying up-to-date with advances in remote sensing and GIS technologies.

Overall, the student learning outcomes of a B.Sc. program in Remote Sensing and GIS aim to produce graduates who are well-equipped with the knowledge, skills, and practical experience to work with remote sensing and GIS technologies, and who can apply these technologies to solve spatial problems in a range of fields.

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13. Credits, Grading and GPA

Credits

(Name) University 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:

   CGPA = [(1st module score x ECTS) + (2nd module score x ECTS) + ……] / 240

14. Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
	English Language I	33	17	2.00	B	
	Remote Sensing Fundamentals	94	106	8.00	C	
	Physics	94	106	8.00	C	
	Calculus	63	137	8.00	B	
	Democracy and human rights	33	17	2.00	B	
	Arabic Language	33	17	2.00	B	

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
	Computer I	62	13	3.00	B	
	Cartography	64	86	3.00	B	
	Statistics	63	112	6.00	C	
	Environmental sciences	63	87	7.00	B	
	Geology	94	106	6.00	C	

Semester 3 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
	Computer II	62	13	3.00	B	Computer I
	sustainable energy	33	42	3.00	C	
	Geodesy	64	61	5.00	C	
	Geographic Information Systems I	94	106	8.00	C	
	Analytical geometry and differential equations	63	87	6.00	B	Calculus

	Weather conditions and climate changes	63	62	5.00	C	

Semester 4 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
	Numerical Analysis	64	61	5.00	B	
	Remote sensing physics	94	81	7.00	C	
	digital image processing	94	106	8.00	C	
	Hydrological	33	42	3.00	C	
	Remote Sensing software packages	62	63	5.00	C	
	English Language II	33	17	2.00	S	English Language I

Semester 5 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
	Geophysics	64	86	6.00	C	
	Analysis and interpretation of satellite images	94	81	7.00	C	
	Elective	33	42	3.00	E	
	Geographic Information Systems II	94	81	7.00	C	Geographic Information Systems I
	data structure and management	64	61	5.00	C	
	English Language III	33	17	2.00	S	English Language II

Semester 6 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
	Information systems	33	42	3.00	C	
	Aerial and thermal photography	94	81	7.00	C	
	Complex	63	62	5.00	B	Calculus

	GIS programming	94	81	7.00	C	Geographic Information Systems II
	spatial analysis	94	81	7.00	C	
	Research Methodology	18	7	1.00	S	

Semester 7 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
	sustainable urban planning	63	87	6.00	C	
	Land uses and land cover	94	81	7.00	C	
	Elective	33	67	4.00	E	
	environmental pollution	63	62	5.00	C	
	sustainable environmental management	63	62	5.00	C	
	Graduation Project	33	42	3.00	C	

Semester 8 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
	Remote Sensing applications	94	81	7.00	C	
	English Language IV	33	17	2.00	C	English Language III
	medical image analysis	94	106	8.00	C	
	Geospatial intelligence	63	87	6.00	C	
	disaster management	33	67	4.00	C	
	Graduation Project	33	42	3.00	C	

15. Contact

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