

Geomatics Engineering



1. Brief about the Program

- **Program Host** : Al Balqa' Applied University
- **Study Plan** : M.Sc. Degree
- **Plan Type** : Thesis
- **Academic Year** : 2019
- **Number of Credit Hours** : 33 Credit Hours

2. Motivation of the Program

As the only leading place for exploring new frontiers in Geomatics in Jordan, the Institute for Geomatics and surveying engineering at Al- Balqaa Applied University, provides Master students a chance to get personally involved in cutting-edge research projects. This opens opportunities to conduct Master theses on new and emerging technologies. Obtaining a Master's degree from the Institute for Geomatics will prepare you for a leading position in industry and academics.

3. Competences and learning outcomes

- Broad knowledge in land survey, mapping and GIS
- Specialized knowledge in some areas and current research topics
- Practical skills to carry out measurements, process field data and evaluate results
- Ability for innovations in designing, managing and implementing GIS projects
- Advanced skills in analyzing, visualize, integrating and managing spatial data
- Deep insight on earth's gravity field and geoid and their applications in geodesy and earth sciences
- Ability to choose proper methods for specific conditions and requirements
- Ability to evaluate possibilities and limitations of existing geodetic methods in Civil Engineering projects
- Insight on needs of new technologies and new solutions in Geomatics
- Skills to communicate effectively
- Ability to manage project and work in groups & project Process
- Awareness on ethnical issues as wel as climate change + sustainable development (HSE)

4. Employment/career opportunities

Graduates from this program will have great chance to find job opportunities in the following governmental agencies and private sectors:

- Ministry of Energy and Mineral Resources
- National Petroleum Company
- The Ministry of Environment
- The Ministry of Public Works and Housing
- Ministry of Municipal and Rural Affairs
- Ministry of Agriculture
- Royal Jordanian Geographical Center
- Royal Scientific Society
- The Ministry of Planning and International Cooperation
- Jordanian Armed Forces
- Ministry of Water and Irrigation
- Ministry of Transport and Communications Sector
- Department of Statistics
- Phosphate Company
- Universities and scientific institutes
- The Ministry of Tourism and Antiquities
- Ministry of Tourism
- National Electricity Company
- Private sector (engineering and mining companies, space companies, consulting firms, etc)

5. Curriculum

a) **Compulsory courses:** (15) Twenty One credit hours as follow:

Course Name	Weekly Hours		Credit Hrs.	Prerequisites
	Theoretical	Practical		
Global Navigation Satellite Systems and Reference System	3	2	3	-
Advanced Photogrammetry and Remote Sensing	2	2	-	-
Spatial database and programming in Geomatics	3	2	3	-
Research methods and Project management	2	2	-	-
Integrated Spatial sensor systems	2	2	-	-
Geovisualization and Spatial Data Analysis	3	2	3	-
Global Navigation Satellite Systems and Reference System	3	2	3	-

b) **Elective courses:** (9) Nine credit hours selected from the following list:

Course Name	Weekly Hours		Credit Hrs.	Prerequisites
	Theoretical	Practical		
Applied mathematics	3	3	-	-
Geodetic space techniques	3	3	-	-
Advanced theory of errors	3	3	-	-
Location-based services	3	2	3	-
Special Topics in Geomatics Engineering	3	2	3	-
Geomatics in Civil Engineering	3	2	3	-
Physical geodesy	3	3	-	-
Cloud Computing and Geographic Information Systems Applications	3	3	-	50145831
Advanced Remote Sensing	3	2	3	50145821
Big Data Management	3	3	-	50145821
Geophysical Engineering and Geomatics	3	3	-	50145811

c) **Thesis (50145897):** (9) Credit Hours

6. Competence matrix

		Global Navigation Satellite Systems	Advanced Photogrammetry	Spatial database and programming	Research methods and Project	Integrated sensor technologies	Geomatics in Civil Engineering	Applied mathematics	Geodetic space techniques	Advanced theory of errors	Location-based services	Special Topics in Geomatics	Geovisualization	Physical geodesy	
Broad Knowledge	1	Broad knowledge in land survey, mapping and GIS	X	X	X	X	X	X	X	X	X	X	X	X	
	2	Specialized knowledge in some areas and current research topics	X	X	X		X	X		X	X	X	X	X	
	3	Practical skills to carry out measurements, process field data and evaluate results	X	X			X	X		X	X				X
Specific Knowledge	4	Ability for innovations in designing, managing and implementing GIS projects		X	X		X	X				X	X	X	
	5	Advanced skills in analyzing, visualize, integrating and managing spatial data			X		X					X	X	X	
	6	Deep insight on earth's gravity field and geoid and their applications in geodesy and earth sciences	X												X
Practical Skills	7	Ability to choose proper methods for specific conditions and requirements	X	X	X		X	X		X	X	X	X	X	
	8	Ability to evaluate possibilities and limitations of existing geodetic methods in Civil Engineering projects	X			X	X	X		X		X	X	X	
	9	Insight on needs of new technologies and new solutions in Geomatics	X	X	X	X	X	X		X	X	X	X	X	X
	10	Skills to communicate effectively	X	X		X	X	X				X	X	X	
Soft Skills	11	Ability to manage project and work in groups & project Process	X	X		X	X	X				X	X		
	12	Awareness on ethnical issues as wel as climate change + sustainable development (HSE)	X	X		X	X	X		X		X	X		X

