Course Name: Geographical Information Systems for Decision Support
Course Code: DS431

I. Basic Course Information

Major or minor element of program: Major
Department offering the course: Operations Research and Decision Support Department

Academic level: 400 Level
Semester in which course is offered: First (fall) Semester
Course pre-requisite(s): Decision Support Tools and Techniques (DS331)
And Database-1 (DS311)

Credit Hours: 3
Contact Hours Through:

Lecture	Tutorial *	Practical *	Total
2.5	0.0	1.5	4.0

* 1.5 hours for **either** Tutorial or Practical

Approval date of course specification: September 2014

II. Overall Aims of Course

This course aims at producing graduates that are able to contribute to strategic decision making involving the issue of geographic information.

III. Program ILOs covered by course

Program Intended Learning Outcomes (By Code)			
Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
K10,K17,K19	I10,I11	P3,P13	G2,G3,G4

IV. Intended Learning Outcomes of Course (ILOs)

a. Knowledge and Understanding

On completing the course, students should be able to:

- K.1 Explain the fundamental theories and concepts of geographical information systems.
- K.2 Acquire the ability to know the needs for effective and accurate geospatial information.
- K.3 Learn how geographical information systems can efficiently be used as a decision support tool.

b. Intellectual/Cognitive Skills

On completing the course, students should be able to:

- I.1 Analyze situations that require mapping and GIS solutions and make recommendations.
- I.2 Assess alternative solutions to problems and recommend appropriate choices.
- I.3 Carry out research tasks regarding GIS and its role as a decision support tool.

c. Practical/Professional Skills

On completing the course, students should be able to:

- P.1 Describe and use the equipment and software commonly used in GIS.
- P.2 Select and use appropriate methods to solve problems and support decision makes in a wide range of problems involving geospatial information.

d. General and Transferable Skills

On completing the course, students should be able to:

- G.1 Acquire the ability to plan projects and manage time effectively while working independently or as part of a team.
- G.2 Retrieve geospatial information from different sources and in different formats.
- G.3 Generate and present reports through the appropriate tools.

V. Course Matrix Contents

	Main Topics / Chapters	Duration (Weeks)	Course ILOs Covered by Topic (By ILO Code)			
			K & U	I.S.	P.S.	G.S.
1-	Introduction to Geographic Information Systems	3	K1			G1
2-	Macro-Micro Framework for Participatory Decision Situations	2	K1,K2			G2,G3
3-	Methods and Tools for Participatory Spatial Decision Support	3	K3	I1,I2		
4-	Social-Behavioural Research Strategies for Investigating the use of Participatory Geographic Information Systems	3			P1	
5-	Applications and Case Studies	2		I3	P2	All
	Net Teaching Weeks	**13**				

VI. Course Weekly Detailed Topics / hours / ILOs

Week No.	Sub-Topics	Total Hours	Contact Hours	
			Theoretical Hours	Practical Hours *
1	Introduction to Geographic Information Systems	2.5	2.5	
2	Introduction to Geographic Information Systems	4	2.5	1.5
3	Macro-Micro Framework for Participatory Decision Situations	4	2.5	1.5
4	Macro-Micro Framework for Participatory Decision Situations	4	2.5	1.5
5	Macro-Micro Framework for Participatory Decision Situations	4	2.5	1.5
6	Methods and Tools for Participatory Spatial Decision Support	4	2.5	1.5
7	**Midterm Exam**			
8	Methods and Tools for Participatory Spatial Decision Support	4	2.5	1.5
9	Methods and Tools for Participatory Spatial Decision Support	4	2.5	1.5
10	Social-Behavioural Research Strategies for Investigating the use of Participatory Geographic Information Systems	4	2.5	1.5
11	Social-Behavioural Research Strategies for Investigating the use of Participatory Geographic Information Systems	4	2.5	1.5
12	Social-Behavioural Research Strategies for Investigating the use of Participatory Geographic Information Systems	4	2.5	1.5
13	Applications and Case Studies	4	2.5	1.5
14	Applications and Case Studies	4	2.5	1.5
15	**Final Exam**			
Total Teaching Hours		**51**	**33**	**18**

* **No Practical/Tutorial during the first week of the semester**

VII. Teaching and Learning Methods

Teaching/Learning Method	Selected Method	Course ILOs Covered by Method (By ILO Code)			
		K & U	Intellectual Skills	Professional Skills	General Skills
Lectures & Seminars	*	All	All	All	
Tutorials	*	K1,K2,K3			All
Computer lab Sessions					
Practical lab Work					
Reading Materials	*	K1,K2,K3	I1,I2,I3	P1,P2	
Web-site Searches					
Research & Reporting					
Problem Solving / Problem-based Learning					
Projects					
Independent Work					
Group Work	*		I1,I2,I3	All	All
Case Studies	*		I1,I2,I3	All	All
Presentations					
Simulation Analysis					
Others (Specify):					

VIII. Assessment Methods, Schedule and Grade Distribution

Assessment Method	Selected Method	Course ILOs Covered by Method (By ILO Code)				Assessment Weight / Percentage	Week No.
		K & U	I.S.	P.S.	G.S.		
Midterm Exam	*	All	All	All	All	20%	7
Final Exam	*	All	All	All	All	60%	14
Quizzes							
Course Work	*	All	All	All	All	10%	10
Report Writing							
Case Study Analysis							
Oral Presentations							
Practical							
Group Project	*	All	All	All	All	10%	12
Individual Project							
Others (Specify):							

IX. List of References

Essential Text Books	• Geographical Information: From Research to Application through Cooperation. By: Massimo Rumor, R. McMillan, Henk F. L. Ottens. • Bringing Geographical Information Systems Into Business. By: David J. Grimshaw. • Geographic Information Systems for Group Decision Making. By: Piotr Jankowski, Timothy L. Nyerges.
Course notes	• Lecturer own notes
Recommended books	• Environmental Modeling with GIS. By: Michael F. Goodchild, Bradley O. Parks, Louis T. Steyaert
Periodicals, Web sites, etc.....	• Different search engines

X. Facilities required for teaching and learning

- Teaching accomodation and aids

Course coordinator: Prof. Mohamed Mostafa Saleh

Head of Department: Prof. Mohamed Mostafa Saleh

Date: September 2014