



Department of: GEOMATICS

College of: Engineering

University of: Salahaddin

Subject: Digital Mapping

Course Book – Grade 3

Lecturer's name: Dr. Dleen M. S. Al-Shrafany

Academic Year: 2022/2023

Course Book

1. Course name	Digital Mapping
2. Lecturer in charge	Dr. Dleen M. S. Al-Shrafany
3. Department/ College	Geomatics Engineering Department.
4. Contact	e-mail: dleen.alshrafany@su.edu.krd
5. Time (in hours) per week	Theory: 2 hrs per class , (4 hrs total) Practical: 2 hrs per class , (4 hrs total)
6. Office hours	Sun:8:30-10:30, Mon: 8:30-10:30, Tue:10:30-1:00, Wed 8:30-1:00, Thur: 8:30-1:00
7. Course code	SE306
8. Teacher's academic profile	https://sites.google.com/a/su.edu.krd/dleen-alshrafany/home
9. Keywords	Maps, coordinate systems, Map projection, digital data, digitizing, raster and vector data, GIS
<p>10. Course overview: In this section the lecturer shall write an overview about the subject he/she is giving. The course overview must cover:</p> <ul style="list-style-type: none"> ▪ The importance of studying the subject ▪ Understanding of the fundamental concepts of the course ▪ Principles and theories of the course ▪ A sound knowledge of the major areas of the subject ▪ Sufficient knowledge and understanding to secure employment <p>This should not be less than 200 words</p>	
<p>11. Course objective: The course provides students: an insight into digital mapping, both in theory (mathematical and physical background) and in practice (applications and training). After the course they will be able to understand the information content of digital data and how to retrieve the information.</p>	
<p>12. Student's obligation The students has to attend the lectures and labs, also they have to prepare all necessary homework that is assigned to them, in addition to that, the students are necessary to work for the quizzes which is held along the study course. At the end of each term the student has to attend exams. Each student has to attend at least two exams and final exam in order to evaluate his knowledge. In addition to the oral exam the student has to test for a practical exam too.</p>	

13. Forms of teaching

The means that are used in the teaching, to deliver the subjects to the students, are Mainly lectures and few labs. Theory and practical samples will be covered in the lecture. In addition to that homeworkers are given to the students in order to motivate them to evolve thinking about the subject. Lecture notes will be available on the personal web site in order to download the required lessons.

14. Assessment scheme

Lab assignments and quizzes **10%**

First semester exam **15%**

Second semester exam **15%**

Final Practical Exam **10%**

Final Exam **50%**

15. Student learning outcome:

Upon completion of the course, students will be able to....

1. Understand the fundamental theory of Digital mapping and using Geographic Information Science behind Geographic Information Systems (GIS),
2. Understand the special nature of spatial data and how they are different from non-spatial data.
3. Learn about the key components of producing digital map, including users, databases, software, and networks
4. Learn basic visualization techniques and cartographic principles
5. Use GIS analyses to address applied problems and/or research questions

16. Course Reading List and References:

▪ Key references:

- Jonathan Liffé, (2005), Datums and Map Projections. For GIS and Surveying, University College of London, London, UK.

▪ Useful references:

William Cartwright, Georg Gartner, Liqiu Meng, Michael P. Peterson (2007), Digital Terrain Modelling, Springer-Verlag Berlin Heidelberg.

17. The Topics:			Lecturer's name
Week-1		Introduction and course structure	Dr. Dleen Al-Shrafany (2 hrs) = Theory
Week-2		History overview of maps	
Week-3		Coordinate systems ad datums	
Week-4		Spherical, spheroidal and cartesian coord. system	
Week-5		Global and regional datums	
Week-6		Aspects of datum transformations	
Week-7		Fundamentals of map projections	
Week-8		Scale factor and computational aspects	
Week-9		Relationship of digital mapping to GIS and LIS	
Week-10		Data acquisition for digital mapping	
Week-11		Digitizing technology and procedures	
Week-12		Positional accuracy of digitizing procedure	
Week-13		Digital mapping data structure	
Week-14		Raster data structure	
Week-15		Vector data structure	
Week-16		Raster to vector conversion	
Week-17		Graphic representation of spatial data	
Week-18		Spatial data models in GIS	
Week-19		Date Input and data Quality	
Week-20		Data editing	
Week-21		Detecting and correcting errors	
Week-22		Data reduction and generalization	
Week-23		Edge matching and rubber sheeting	
Week-24		Data base management system	
Week-25		Building map model	
Week-26		Layer based model	
Week-27		Object oriented based model	
Week-28		Data Accuracy, precision and resolution	
18. Practical Topics (If there is any)			Dr. Dleen Al-Shrafany (2 hrs) = Practical
Week-1		Map Identification: diff. Between digital and cartographic map	
Week-2		Coordinate system transformation	
Week-3		Forward transformation	
Week-4		Inverse transformation	
Week-5		Datum transformation	
Week-6		Map projection	
Week-7		UTM projection	
Week-8		Stereographic projection	
Week-9		Digitizing	
Week-10		Manual and automatic digitizer instrument	

Week-11	Starting surfer software for 2D and 3D mapping
Week-12	Viewing and creating data
Week-13	Creating a grid file
Week-14	Creating a contour map
Week-15	Creating contour levels
Week-16	Exporting 3D contours
Week-17	Posting data points and working with layers
Week-18	Creating a profile
Week-19	Creating a 3D surface map
Week-20	Creating maps for different coordinates system
Week-21	Overlaying map layers

19. Examinations:

1. Compositional: In this type of exam the questions usually starts with Explain how, What are the reasons for...?, Why...?, How....?

With their typical answers

Examples should be provided

2. True or false type of exams:

In this type of exam a short sentence about a specific subject will be provided, and then students will comment on the trueness or falseness of this particular sentence. Examples should be provided

3. Multiple choices:

In this type of exam there will be a number of phrases next or below a statement, students will match the correct phrase. Examples should be provided.

20. Extra notes:

Here the lecturer shall write any note or comment that is not covered in this template and he/she wishes to enrich the course book with his/her valuable remarks.

21. Peer review

پیداچوونہوہی ھاوہل

This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book by writing few sentences in this section.

(A peer is person who has enough knowledge about the subject you are teaching, he/she has to be a professor, assistant professor, a lecturer or an expert in the field of your subject).

ئەم کۆرسبووکە دەبیت لەلایەن ھاوہلیکی ئەکادیمیەوہ سەیر بکریت و ناوەرۆکی بابەتەکانی کۆرسەکە پەسەند بکات و جەند ووشەیک بنووسیت لەسەر شیاوی ناوەرۆکی کۆرسەکە و واژووی لەسەر بکات. ھاوہل ئەو کەسەیکە زانیاری ھەبیت لەسەر کۆرسەکە و دەبیت پلەمی زانستی لە ماموستا کەمتر نەبیت.