

**CRP 514: INTRODUCTION TO GEOGRAPHIC
INFORMATION SYSTEMS**

Course Credit Hours: 3.0

(13th Offer)

Instructor: Dr. Baqer M. Al-Ramadan

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Instructor Web Site: <http://www.kfupm.edu.sa/crp/baqer.html>

Course Web Site On WebCT: <http://webcourses.kfupm.edu.sa/webct>

Instructor Office Hours: 09:30 AM - 11:30 AM Sundays and Tuesdays, and by appointment

Course Meeting Location: Rm. 418/Bldg. 19 and the GIS Unit (Rm. 449-1/19)

Course Meeting Times: 8:00 PM - 9:15 PM Sundays and Tuesdays

GIS Unit Administrator: Mr. Mohammad Raziuddin

Administrator Office Location: GIS Unit (Rm. 449-1/19)

Administrator Hours: 7:30 AM – 4:00 PM (Except Lunch break) – Saturday to Wednesday

Administrator Office Phone: (03) 860-2331

Administrator Mobile #: (050) 287-1044

Course Objectives:

This course is intended to provide an in-depth theoretical and practical study of the relatively new and rapidly expanding field of GIS. On the theoretical side, the course will cover an array of conceptual aspects of GIS technology, such as GIS Functional Elements, Data Input and Data Output, Spatial Data Structures, GIS Planning and Implementation, and the various applications of GIS. The course will also cover some technical aspects of GIS such as Hardware and Software, System Configuration, Map Projections, and Common Coordinate Systems. In addition, the course will cover other relevant topics such as Remote Sensing, Global Positioning System (GPS), and Global applications of GIS

Course Prerequisites: Graduate Standing.

Course Format:

The topics of the course will be presented through a combination of lectures and hands-on sessions. ArcView 9.0 will be used as the main GIS software to present the practical part of this course.

Course Textbook:

Book title: "Geographic Information Systems: An Introduction" by Tor Bernhardsen, 3rd Edition, 2002.

Grading Breakdown

Assignments	30%
Final Exam	30%
Term Project/Term Paper	40%

Assignments

The course will include some assignments (30% of the final grade).

Final Exam

At the end of the term, there will be a Final Exam that covers the theoretical and conceptual topics presented during the course (30% of the final grade).

Term Project/Term Paper

You are required to carry out a GIS project using ArcView 9.x and submit a Term Project Report by the end of the term. For this purpose you can utilize your own data (for example from Geography Network site at: www.geographynetwork.com; GIS Data Depot at <http://data.geocomm.com>) or you may utilize ESRI Data & Maps, data that come with ArcGIS software. The instructor will also exert efforts to secure some local data (40% of the final grade).

In lieu of the project, you can submit a Term Paper related to GIS technology and its applications. The Term Paper should cover original ideas, techniques, approaches and experiences in the rapidly growing field of Geographical Information Systems (GIS) or related technologies. Examples of topics:

- GIS Applications in certain areas such as:
 - City and Regional Planning
 - Zoning and Land Use Planning
 - Urban Growth Management
 - Environmental Impact Assessment
 - Transportation Analysis and Planning
 - Urban Real Estate Management and Development
 - Location-Based Services
 - Water and Wastewater Management
 - Telecommunications
 - Retail and Commercial Business
 - Natural Resources Management
 - Forestry and Wild Life Management
 - Optimum Site Selection for schools, hospitals, medical centers, commercial centers etc
- GIS and Remote Sensing
- GIS and Global Positioning System (GPS)
- Internet GIS
- Any other relevant topic approved by the course instructor

More details about the requirements of the Term Project /Term Paper will be provided later.

TOPICS BREAKDOWN

(Tentative)

- GIS Definition, Background, and History
- GIS Functional Elements
- Data Input and Output
- Data Management
- Data Manipulation and Analysis
- Spatial Data Structures
- Urban and Municipal Applications of GIS
- GIS Applications in Natural Resources Management
- Global Scale Applications of GIS
- Remote Sensing
- Global Positioning System (GPS)
- GIS-based Optimum Site Selection: Two Case Studies
- Internet GIS
- GIS in Location Based Services (LBS)
- Map Projections
- Common Coordinate Systems
- GIS Planning and Implementation
- Development of an Urban and National GIS: Case Studies
- Past, Present, and Future of GIS
- An Overview of available GIS Literature and Resources