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| Logo-BenhaFaculty of Engineering at shoubraBenha University Model No.12Course Specifications : Geographical Information System GIS-1 |   |
| Alfarabi for Quality Assurance and Accreditation System - at 9/2/2014 1:42 AM  |

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| **University** : Benha University |

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| **Faculty** : Faculty of Engineering at Shoubra |

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| **Department offering the program** : Surveying Engineering Department  |

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| **Department offering the course** : Surveying Engineering Department**1- Course Data**  |
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| Course Code : SUR 323 | Course Title : Geographical Information System GIS-1 | Study Year : Third Year |
| Specialization :  | Surveying Engineering Course : Compulsory |
| Teaching Hours:  |
| Lecture : 2 | Tutorial :  | Practical : 3 |  |

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| **2-  Course Aim**  |
| For students undertaking this course, the aims are to: |
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| 2.1- Become familiar with the basic principles and procedures associated with GIS.  |
| 2.2- Gain knowledge of the range of GIS applications  |
| 2.3- Understanding the fundamental role of GIS in decision making.  |
| 2.4- Become familiar with the basic practical skills in the use of GIS software.  |
| 2.5- Introduce the fundamentals of database, including both spatial and attribute data.  |
| 2.6- Present the concepts of Graph theory and Network applications.  |

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| **3- Intended Learning Outcomes of Course (ILOS)**  |
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| **a-  Knowledge and Understanding**  |
| On completing this course, students will be able to: |
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| a5 Understand the GIS principles and graph theory methodologies in order to solve engineering problems such as data modeling, database modeling and Networking  |
| a15 Recognize applications of all new and advanced surveying techniques, e.g., remote sensing, photogrammetry, GPS and GIS, navigation and aviation in all surveying tasks.  |
|  a16 Be familiar with technologies of data gathering from field, maps and images, and their Graphical representation and organization on computer storage media, and their important role for decision making.  |

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| **b-  Intellectual Skills**  |  |
| At the end of this course, the students will be able to: |  |
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| b2 Select appropriate solutions for engineering problems based on analytical thinking.  |
| b3 Think in a creative and innovative way in GIS problem solving and design.  |

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| **c-  Professional Skills** |  |
| On completing this course, the students are expected to be able to: |  |
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| c6. Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs. |
| c17 Performing spatial analysis using GIS and CAD technology.  |
| c20 Self study and use of internet.  |

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| **d-  General Skills**  |  |
| At the end of this course, the students will be able to: |  |
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| d4 Demonstrate efficient IT capabilities.  |
| d7 Search for information and engage in life-long self learning discipline.  |

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| **4- Course Contents**  |
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| **No.** | **Topics** |
| 1 | Introduction to GIS |
| 2 | Elements of GIS system |
| 3 | Data modeling “Vector, Raster” |
| 4 | Data Storage “Spatial data, Attribute data” |
| 5 | Spatial database  |
| 6 | ER Model & Normalization |
| 7 | Structure Query Language “SQL” |
| 8 | Graph Theory |
| 9 | Dynamic Segmentation |
| 10 | Practical Network Analysis |

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| **5- Teaching and Learning Methods**  |
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| 5.1- Lectures  |
| 5.2- Laboratory  |
| 5.3- Computer based work  |
| 5.4- Case Study |

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| **6- Teaching and Learning Methods of Disables** |
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| 6.1- N.A |

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| **7- Student Assessment**  |
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| **a- Student Assessment Methods** |
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| 1 | Assignments  to a5,b3,c17,c20, d4,d7  |
| 2 | Quizzes  to assess  a5,b3,c6,c17,d4,d7  |
| 3 | Mid-term exam  to assess   a15,a16, b2,  |
| 4 | Oral exam  to assess   a5, b2,b3,c6, c17,c20  |
| 5 | Final exam  to assess  a5, a15,a16, b2,b3 |

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| **b- Assessment Schedule** |  |
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| **No.** | **Assessment** | **Week** |
| 1 | Assignments | 2,4,6,10,12 |
| 2 | Quizzes  | 3,7,11 |
| 3 | Mid-term exam  | 8 |
| 4 | Oral Exam | 14 |
| 5 | Final exam | 15  |

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| **c- Weighting of Assessments** |  |
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| **Assessment** | **Weight** |
| Mid-term Examination | 10 % |
| Final Examination | 60 % |
| Oral Examination | 20 % |
| Practical Examination | 0 % |
| Semester work | 10 % |
| Other types of assessment | 0 % |
| Total | 100 % |

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| **8- List of References**  |
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| **a- Course Notes** |
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| 1- Lecture: Power Point Presentation, Assignments, Self-tests, Prepared by the Instructor. |

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| **b- Recommended Books** |
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| 1- 1- Francis Harvey., 2015.A primer of GIS: fundamentals and cartographic concepts, 2nd edition. The Guilford Press,USA.  |
| 2- 2- John Stillwell and Graham Clarke., 2009. Applied GIS and Spatial Analysis. Wiley, USA. |

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| **c- Web Sites** |
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| 1- www.itep-edu.org  |

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| **- Course Coordinator :    Amr Hanafi Ahmed Ali** |

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| **- Head of Department :    Mohamed Ibrahim Moustafa Zahran** |

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|  | Benha University Faculty of Engineering at shoubraModel No.11ACourse Specifications : Geographical Information System GIS-1 |   |
| Alfarabi for Quality Assurance and Accreditation System - at 9/2/2014 1:42 AM  |

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| **University** : Benha university |

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| **Faculty** : Faculty of Engineering |

at Shoubra

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| **Department** : Surveying Engineering Department  |

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| **Matrix of Knowledge and Skills of the course**  |
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| **No.** | **Topics** | **week** | **Basic Knowledge** | **Intellectual Skills** | **Professional Skills** | **General Skills** |
| 1 | Introduction to GIS | 1 | a5, | b3 |  |  |
| 2 | Elements of GIS system, | 2 | a5,a16 |  |  |  |
| 3 | Data modeling “Vector, Raster”, | 3 | a5,a16 | b3,b | c6 |  |
| 4 | Data Storage “Spatial data, Attribute data”, | 4 | ,a5,a16 | b3, | c6 |  |
| 5 | Spatial database | 5 | a5, | b2, | c17 | d4 |
| 6 | Spatial database | 6 | a5, | b2, | c17 | d4 |
| 7 | ER Model & Normalization | 7, | a5, | b2 | c6 | d4 |
| 8 | Midterm | 8 |  | , |  |  |
| 9 | Structure Query Language “SQL” | 9 | a15,a16 |  | c20 |  |
| 10 | Graph Theory | 10 | a15,a16 |  |  |  |
| 11 | Graph Theory | 11 | a15,a16 |  |  |  |
| 12 | Practical Network Analysis | 12 | a5 |  | c6 | d7, |
| 13 | Practical Network Analysis | 13 | a5 |  | c6 | d7 |
| 14 | Oral Exam | 14 | a5, a16 | b2,b3, | c6, c17,c20 |  |
| 15 | Final Exam | 15 | a5, a15,a16,  | b2,b3 |  |  |

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|  | **The Matrix of The Relation Between The Program ILOS and The ILOS of The Course** |
| **No** | **Geographical Information System GIS-1** | **a5** | **a15** | **a16** | **b2** | **b3** | **c6** | **c17** | **c20** | **d4** | **d7** |
| 1 | **a5** | 1 |  |  |  |  |  |  |  |  |  |
| 2 | **a15** |  | 1 |  |  |  |  |  |  |  |  |
| 3 | **a16** |  |  | 1 |  |  |  |  |  |  |  |
| 4 | **b2** |  |  |  | 1 |  |  |  |  |  |  |
| 5 | **b3** |  |  |  |  | 1 |  |  |  |  |  |
| 6 | **c6** |  |  |  |  |  | 1 |  |  |  |  |
| 7 | **c17** |  |  |  |  |  |  | 1 |  |  |  |
| 8 | **c20** |  |  |  |  |  |  |  | 1 |  |  |
| 9 | **d4** |  |  |  |  |  |  |  |  | 1 |  |
| 10 | **d7** |  |  |  |  |  |  |  |  |  | 1 |

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|  | **Matrix of The Relation Between Course ILOS and The Main Aims of The Course** |
| **No** | **Geographical Information System GIS-1** | **a5** | **a15** | **a16** | **b2** | **b3** | **c6** | **c17** | **c20** | **d4** | **d7** |
| 1 | Become familiar with the basic principles and procedures associated with GIS.  | 1 |  |  |  | 1 |  |  |  |  |  |
| 2 | Gain knowledge of the range of GIS applications  |  |  |  | 1 | 1 |  |  | 1 |  |  |
| 3 | Understanding the fundamental role of GIS in decision making.  | 1 | 1 |  |  |  | 1 |  |  | 1 |  |
| 4 | Become familiar with the basic practical skills in the use of GIS software.  | 1 |  | 1 |  | 1 | 1 |  | 1 |  | 1 |
| 5 | Introduce the fundamentals of database, including both spatial and attribute data |  |  |  |  |  | 1 |  |  |  |  |
| 6 | Present the concepts of Graph theory and Network applications |  |  |  |  |  |  | 1 | 1 |  |  |

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| **- Course Coordinator :    Amr Hanafi Ahmed Ali****- Head of Department :    Mohamed Ibrahim Moustafa Zahran** |