University / Academy: Menoufia University

College / Institute: Faculty of Electronic Engineering

Department: Computer Science and Engineering

# Course Specification

| 1- Course basic information: | | |
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| **Course Code: CSE 472** | **Course Title:** **(SELECTED TOPICS-4 GEOGRAHIC INFORMATION SYSTEM)** | **Academic year: 2011/2012** **Level ( 4 ) – Semester : 2** |
| **Faculty requirement** | **Teaching hours: Lecture** 3 **Tutorial** 1 **Lab** | |

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| **2- Aim of the course** | - Understand the fundamental characteristic of geographic information systems (GIS)<br>- Understand geographic information system as integration technology<br>- Understand a basic required to design and implement spatial data<br>- Have acquired some practical skills to analysis the real world map<br>By using software tools as ARCGIS.<br>- Know the map projection and nature sources of GIS |
| **3- Intended Learning Outcomes** | |
| A- Knowledge and Understanding: | - a1. Concepts and theories of mathematics and sciences, appropriate to the computer science and engineering<br>- a16 Related research and current advances in the field of computer software and hardware<br>- a17 Technologies of data, image and graphics representation and organization on computer storage media |
| **B- Intellectual Skills** | b1 Select appropriate mathematical and computer-based methods for modeling and analyzing problems. |

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| | b2 Select appropriate solutions for engineering problems based on analytical thinking<br><br>b3 Think in a creative and innovative way in problem solving and design<br><br>b4 Combine, exchange, and assess different ideas, views, and knowledge from a range of sources<br><br>b7 Solve engineering problems, often on the basis of limited and possibly contradicting information.<br><br>b15. Select, synthesize, and apply suitable IT tools to computer engineering problems. |
| **C- Professional Skills** | c 1 Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems c11. Exchange knowledge and skills with engineering community and industry.<br><br>c8 Apply safe systems at work and observe the appropriate steps to manage risks<br><br>c9 Demonstrate basic Organizational and project management skills.<br><br>c10 Apply quality assurance procedures and follow codes and standards<br><br>c14. Use appropriate specialized computer software, computational tools and design packages throughout the phases of the life cycle of system development<br><br>c15. Write computer programs on professional levels achieving acceptable quality measures in software development. |
| **D- General Skills** | d2 Work in stressful environment and within constraints<br><br>d6. Effectively manage tasks, time, and resources<br><br>d8 Acquire entrepreneurial skills design |
| **4- Course Contents** | 1- introduction to Geographic Information Systems ( GIS definition - GIS through history) 2-spatial data structure and data Model (The function of the GIS) – 3-Map and sources of geographic data (Studying the way maps and other data have been stored or filed as layers of information in a GIS makes it possible to perform complex analyses) .4-GIS and real world model (- Using GIS - Mapmaking – Site selection - Emergency response planning - Simulating environmental effects |

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| | Graphic display techniques) .5-Som GIS application (GIS application).<br>6- GIS future(The future of GIS ) |
| **5- Teaching and Learning Methods** | - Lectures.<br>- Exercises and tutorials.<br>- Research assignments. |
| **6- Teaching and Learning Methods for disable students** | N/A |
| 7- Student Assessment | |
| **a- Assessment Methods** | - Reports, assignments, exercises, and midterm and final written exams to assess knowledge and understanding.<br>- Regular oral and written quizzes to assess intellectual skills<br>- Oral exams to assess professional skills.<br>- Reports and assignments, and discussions to assess general and transferable skills. |
| **b- Assessment Schedule** | - Quizz-1: Week no 5<br>- Mid-Term exam: Week no 8<br>- Quizz-2: Week no 11<br>- Quizz-3: Week no 14<br>- Final – term examination: Week no 15 |
| **c- Weighting of Assessment** | - Class tutorial and quizzes : 10 %<br>- Mid-term examination: 10 %<br>- Case study and/or practical exam: 10 %<br>- Final – term examination: 70 %<br>- Other types of assessment: %<br>Total 100 % |
| 8- List of text books and references: | |
| **a- Course notes** | - There are lectures notes prepared in the form of a book authorized by the department. |
| **b- Text books** | [1]Galati, Stephen R. (2006): Geographic Information Systems Demystified. Artech House Inc. (ISBN 158053533X)<br><br>[2]T. Sutton, O. Dassau, M. Sutton, 2009. A Gentle Introduction to GIS |

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| | Brought to you with Quantum GIS, a Free and Open Source Software GIS Application for everyone sponsored by: Chief Directorate: Spatial Planning & Information, Department of Land Affairs, Eastern Cape, South Africa.<br><br>[3]Rajkumar Buyya, Suraj Pandey, and Christian Vecchiola, Cloudbus Toolkit for Market-Oriented Cloud Computing, Proceeding of the 1st International Conference on Cloud Computing (CloudCom 2009, Springer, Germany), Beijing, China, December 1-4, 2009.<br><br>[4] Clarke, K. C., (2003). Getting Started With Geographic Information Systems, Prentice Hall<br><br>[5] Harvey, Francis(2008) A Primer of GIS, Fundamental geographic and cartographic concepts. The Guilford Press, 31 pp.<br><br>[6]Bolstad, P. (2005) GIS Fundamentals: A first text on Geographic Information Systems, Second Edition. White Bear Lake, MN: Eider Press, 543 pp.<br><br>[7]Olsson, L. and Pilesjö, P., 2002: Approaches to spatially distributed hydrological modelling in a GIS environment. Ch 9 (pp. 166-200) in Skidmore & Basiansson 2002: Environmental Modelling with GIS and Remote Sensing, Taylor & Francis, London, 268 p.<br><br>[8]Van Westen, C.J. (2002) Remote sensing and geographic information systems for natural disaster management. In: A.K. Skidmore (ed) "Environmental modeling with GIS and remote<br><br>- |
| **c- Recommended books** | - None. |
| **d- Periodicals, Web sites ……etc** | - None. |

## Course Contents - ILOs Matrix

| Content Topics | Week | A- Knowledge & Understanding | B- Intellectual skills | C- Professional and practical skills | D- General and transferable skills |
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| 1- introduction to Geographic Information Systems ( GIS definition - GIS through history) | 1/2 | | b4 | c1 | |
| 2-spatial data structure and data Model (The function | 3/4/5 | A1, a17 | b1,b2,b3,b4 | c1,c9,c10,c14 | d2,d6,d8 |

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| of the GIS) | | | | | |
| 3-Map and sources of geographic data (Studying the way maps and other data have been stored or filed as layers of information in a GIS makes it possible to perform complex analyses | 6/7/8 | a1, a16, a17 | b1,b2,b3,b15 | c9,c10 | d2,d6,d8 |
| 4-GIS and real world model - (- Using GIS - Mapmaking – Site selection - Emergency response planning - Simulating environmental effects<br>- Graphic display techniques) | 9/10 | a1, a16, a17 | b1,b2,b3,b7 | C1,c9,c10,c14, c15 | D2,d6,d8 |
| 5-Som GIS application (GIS application) | 11/12 | a16, a17 | b1,b2,b3 | c9,c10 | d2,d6,d8 |
| 6- GIS future(The future of GIS ) | 13/14 | a16, a17 | b1,b2,b3,b7 | C1,c9,c10,c14, c15 | D2,d6,d8 |

**Course coordinator:** **Head of Department:**

**Dr. Mervat Mosa** **Prof. Nawal Ahmed El-Fishawy**

**Date: / /**