**University of Tehran**
**School of Electrical and Computer Engineering**

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| **Course:** | **81015888 – Advanced Topics in Decision Support Systems (DSS)** | | |
| **Course type:** | Elective | CE, IT | Credit: 3 |
| **Level:** | Graduate | | |
| **Co-requisite(s):** | - | | |
| **Prerequisite(s):** | - | | |
| **Prerequisite by topic:** | A general knowledge on data mining and/or pattern recognition | | |
| **Textbook(s):** | [1] J. Aronson, E. Turban, and T. Liang, *Decision support systems and intelligent systems*. Pearson, Upper Saddle River, 2005.<br>[2] C. Vercellis, *Business intelligence: data mining and optimization for decision making*. Wiley Online Library, 2009. | | |
| **Coordinator:** | Maryam S. Mirian | | |
| **Goals:** | The main objective of this course is make the students familiar with the methods of knowledge extraction from data and its inherent relation with the quality of decision making. | | |
| **Outcome:** | Upon successful completion of the course, when the students confront a problem which can be facilitated through ideas of a decision support system<br>1. Recognize the required input data sources<br>2. Specify an appropriate structure for automating the decision making<br>3. Design the core engine of decision support system based on the types of decision and the existing data to support it. | | |
| **Topics:** | 1) Introduction on decision, knowledge and data<br>2) Challenges of complex decision making in an organization<br>3) An overview of the decision making methods of a human<br>4) The relation of knowledge and data from different perspectives<br>5) DSS Architecture and types<br>6) Requirements of decision makers in an organization<br>7) Datawarehousing and DSS<br>8) OLAP and DSS<br>9) Data mining in DSS<br>10) Multi-criteria decision making | | |

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| | 11) Group decision making<br>12) Organizational decision making<br>13) DSS using Knowledge management<br>14) Recommender systems<br>15) Success and failure factors of DSS projects<br>16) Evaluation measures of DSS<br>**17)** Managerial e-dashboards |
| **Computer usage:** | To perform computer assignments, student will use computer programming languages and tools. |
| **Assignments:** | For some topics such as tool selection, proper approach specification and … students will perform analysis and submit paper assignments. |
| **Projects:** | In order to practically understand the ideas in this course, students need to select a project or define a new one. Then they have to present the results, studies and the software implementation at the end of the semester. |
| **Grading:** | Assignment and projects %60<br><br>Midterm exams: %20<br>Final exam: %20 |
| **Further readings:** | [3] F. Burstein and C. W. Holsapple, *Handbook on Decision Support Systems 2: Variations*, vol. 2. Springer-Verlag New York Inc, 2008.<br>[4] G. Uchyigit and M. Y. Ma, *Personalization techniques and recommender systems*, vol. 70. World Scientific Pub Co Inc, 2008.<br>[5] J. Kleinberg, *Networks, Crowds, and Markets*. Cambridge University Press, 2010. |
| **Prepared by:** | Maryam S. Mirian |
| **Date:** | 4 Jan. 2012 |

*EE: Electrical Engineering CE: Computer Engineering IT: Information Technology