

Course Profile - Department of Information Technologies

Course Number : IT 202	Course Title : Data Structures and Algorithms
Required / Elective : Required	Pre / Co-requisites : CSE100 or CSE101
Catalog Description: Arrays, stacks and queues, linked lists, trees, sorting, hashing; heap structures, search structures. Algorithm analysis, complexity, parallel algorithms, files organization.	Textbook / Required Material : Data Structures a Pseudocode Approach by R.F. Gilberg, B.A. Forouzan Data Structures and Algorithm Analysis in C by M.A. Weiss
Course Structure / Schedule : (3+1+2) 4 / 7 ECTS	
Extended Description : The course makes the students familiar with the data structures, advance your programming skills, learn algorithm design techniques, learn how to select the most appropriate data structure to solve the problem, learn how to analyze algorithms based on the time complexity, and design algorithms based on effectiveness of the choices.	
Design content : The students are expected to design appropriate data models and structures for the term projects.	Computer usage: The students are expected to write projects in the laboratory sessions.
Course Outcomes: [relevant program outcomes in brackets]: • Having advanced skills on data structures [1], • Improving the programming skills [1, 3], • Developing advanced algorithms to solve problems [4, 5] • Learn how to analyze algorithms based on the time complexity [5, 6].	

Program Outcomes for Management Information Systems Program:

1. A foundation in mathematics and basic sciences and ability to apply acquired knowledge as they relate to the study and practice of information systems management.
2. An ability to align information technology, organizational and strategic matters.
3. An ability to propose, analyze, design, develop, test and maintain an information technology system including software solutions, security model, computer and network infrastructure, etc. to solve information systems problems.
4. An ability to analyze local and global impact of computing on individuals, organizations and society; and the ability to apply information systems techniques, skills, and tools for regular computing practices as well as to improve effectiveness of current methodologies.
5. An ability to effectively communicate in oral and written media with all kinds of related audiences; and prepare documentation for this purpose as required.
6. An understanding of professional, ethical, legal, and social issues and responsibilities of information systems management profession.
7. A taste and breadth of knowledge across several social topics outside the immediate requirements of the information systems management profession, and the ability to work within heterogeneous teams to accomplish a common goal including people from the information systems area as well as other disciplines.
8. An ability to engage in life-long learning and professional development for personal improvement to follow contemporary information systems issues.

Teaching methods

Students will learn the theory by pre-readings and attending affectively to the classes. The individual exercises will be elaborated during the problem solution sessions. 5 small projects will be carried out to consolidate the theoretical background with practical skills.

Assessment methods

1 Midterm exam	30 %
5 Projects	25 % (total)
1 Final	45 %.

Student workload:

Preparatory reading	55 hrs
Lectures, workshop, discussions	60 hrs
Projects	55 hrs
Examinations	5 hrs
TOTAL	175 hrs

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Revision Date : 08.02.2010