

Course #:	INFO-I 308					
Course Title:	Information Representation					
Course Type:	Required core					
Prerequisites:	INFO I201 and INFO I211.					
Credits:	4					
Text Book:	Data Structures and Algorithm Analysis in C++, 3rd edition, by M. A. Weiss					
References:	Class notes by Hakimzadeh					
Current Catalog Description:	The basic structure of information representation in social and scientific applications. Representational structures and approaches from many disciplines are introduced: philosophical theories of classification and categorization; information access and representation on the World Wide Web; object-oriented design and relational databases; AI knowledge representation and discovery.					
Course Goals	<p>The student who completes this course will become proficient in:</p> <ol style="list-style-type: none"> 1. the basic structure of information representation in digital information systems. 2. the basic method of representing data inside a computer (characters and numbers) 3. the binary, octal and hexadecimal number systems. 4. the basic arithmetic manipulation of binary numbers. 5. the basic techniques in representing different types of data. (integer, char, boolean, string, array, sound, images, video, etc.) 6. the basic data structures such as Queues, Stacks, Trees and Hash tables. 7. the basic file organizations 8. the logical data model such as ERD and their use in databases. 9. the declarative languages such SQL and XPath and their use in data retrieval. 					
Major Topics Covered in the Course	<ol style="list-style-type: none"> 1. Low level data representation (char, number, string, array, sound, image, etc.) 2. Queues, stacks, binary trees; recursion. 3. Performance issues; analysis of algorithms. 4. Hash tables. 5. Searching Sorting concepts 6. Data modeling, ERD, UML 7. File organizations (Sequential, Random, Indexed) 8. XML 9. Information Retrieval (SQL) 					
Laboratory projects (specify number of weeks on each)	No closed laboratory					
Estimate Curriculum	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; text-align: center;">Area</td> <td style="width: 33%; text-align: center;">Core</td> <td style="width: 33%; text-align: center;">Advanced</td> </tr> </table>			Area	Core	Advanced
Area	Core	Advanced				

Category Content (Semester hours)	Algorithms	10	5
	Software Design	19	6
	Comp. Arch.		
	Data Structures	20	8
	Prog. Languages		
	Additional hours may be dedicated to curriculum categories not listed above. For example explanation of concepts and theories. Discussion of social and ethical issues, discussion of inter personal relationships and working within groups.		
Oral and Written Communications	Not an objective for this course.		
Social and Ethical Issues	Not an objective for this course.		
Theoretical Content	Introduction to analysis of algorithms 2 hours.		
Problem Analysis	Homework assignments involved applications for the various data structures thus we had to analyze the problem, devise a solution, and analyze the best use of the data structure for that problem.		
Solution Design	Homework assignments require the students to analyze the best use of the data representation for the problem and devise a solution.		
Prepared By	Hakimzadeh		