

Nova Southeastern University
Graduate School of Computer and Information Sciences

DCTE750
Management of Data, Information and Knowledge in Education

Summer Institute 2007
July 8 – December 7, 2007

Course Syllabus

(Note: This syllabus will remain in a tentative status until the end of the Institute week on Sunday, July 15, 2007)

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Class Location and Format: Institute

Class Hours: N/A

Class Web Site: All course materials are available through the course's WebCT site

Course Description: This course explores several issues of interest in managing data, information, and knowledge in an educational setting. Included among the topics examined are: database design, structure, and capabilities; data warehousing; data mining; text mining; information retrieval; information policy, security, and privacy; and knowledge management.

Required Textbook(s): None

Recommended Textbooks:

SCIS Dissertation Guide

Publication Manual of the American Psychological Association, Fifth Edition. American Psychological Association, 2001. ISBN: 0-07-246367-8

Required Software: None.

Learning Outcomes:

By the end of the course, the student will be able to:

1. Plan, develop, and document an educational database management system.
2. Work effectively as a member of a team to collaboratively conduct meaningful research into the application of data, information, or knowledge management technology as a solution to a problem in education.
3. Identify, analyze, and evaluate areas of research interest in the application of database technology to problems in education.
4. Identify, analyze, and evaluate areas of research interest in the application of knowledge management to problems in education.
5. Identify, analyze, and evaluate areas of research interest in the application of information retrieval to problems in education.
6. Identify, analyze, and evaluate areas of research interest in the implementation of information policy to problems in education.

Course Outline:

- 1) Overview of database
 - a) Definition and description of database
 - b) DBMS and database applications
 - c) Database models
 - d) Planning and designing the database
- 2) Data warehousing
 - a) Definition and description
 - b) Comparison and contrast to database
 - c) Applications and limitations
- 3) Data mining
 - a) Description
 - b) Techniques
 - c) Applications and limitations
- 4) Information retrieval
 - a) Definition and description
 - b) Challenges
 - c) Text
 - d) Media elements
- 5) Information policy
 - a) Security
 - b) Privacy
- 6) Knowledge management
 - a) Definition and description
 - b) Strengths and limitations
 - c) Technologies and processes
 - d) Applications in education

Course Schedule:

Week Ending	Knowledge Base Development	Database Design	Resource Pack Development	Collaboration Reflection	Course Reflection
15-Jul	1				
22-Jul					
29-Jul					
5-Aug	2				
12-Aug		Report Due			
19-Aug					
26-Aug	3				
2-Sep					
9-Sep					
16-Sep	4				
23-Sep					
30-Sep			Preference Surveys		
7-Oct			Teams Formed		
14-Oct					
21-Oct					
28-Oct					
4-Nov					
11-Nov					
18-Nov					
25-Nov				Resource Pack Due	
2-Dec				Report Due	
7-Dec					Report Due

Instruction Methods and Tools: There are five types of assignments you will do in this course: knowledge-base development, database analysis and design, team-based resource pack development, collaboration reflection, and a course reflection. The specific requirements for each assignment are detailed below in the Assignments section; the Course Schedule section detailed above provides specific due dates for each assignment.

Assignments:

Knowledge-Base Development

- 1) A total of 40 points (20% of the course grade) can be earned in this assignment. Ten (10) points for each of the four (4) topics.
- 2) All contributions must be made in the class' WebCT discussion pages under the applicable knowledge-base topic.
- 3) Erroneous or inconsistent knowledge is not beneficial. Therefore, the knowledge base postings will be reviewed to insure the post conforms to the assignment and focuses on

the knowledge topic being built. Postings that do not present the specifics of the assignment will be deleted and the student notified.

- 4) Assignment specifics. There will be two types of entries you will need to make in the dedicated WebCT discussion forum area for each of the three topics:
 - a) Initiate the review of an article (one entry per knowledge-base assignment)
 - i) Select an article from a current, peer-reviewed journal or conference proceeding
 - ii) The article you select cannot, of course, already have been reviewed by another student in the class
 - iii) Write a scholarly, 3 – 5 paragraph annotated bibliography entry for the article.
 - (1) Identify and discuss those points *you* found of greatest potential research interest in the article
 - (2) Do not just summarize the article
 - iv) Format for posting:
 - (1) Subject line should be a complete citation for the article in APA format
 - (2) First line in the body of the posting should start with the word “Keywords”, followed by a list of what you consider the keywords for the article to be, based on the points of interest you noted in the article (Note: do not just copy the keywords from the article)
 - (3) Attach a copy of the article in .pdf format to your posting
 - b) Article review follow-up (two additional entries per knowledge-base assignment)
 - i) Since each person might well find different points of interest in the same article, it is of value to have articles reviewed by multiple reviewers.
 - ii) Write a scholarly, 3 – 5 paragraph annotated bibliography entry for two other articles initiated by your colleagues in class.
 - (1) Identify and discuss those points *you* found of greatest potential research interest in the article (quite possibly different than those identified by the initiating reviewer)
 - (2) Do not just summarize the article
 - (3) Do not critique the annotated bibliography entries of others
 - iii) Format for posting:
 - (1) Subject line should be a complete citation for the article in APA format
 - (2) First line in the body of the posting should start with the word “Keywords”, followed by a list of what you consider the keywords for the article to be, based on the points of interest you noted in the article (Note: do not just copy the keywords from the article)
 - (3) Your list of keywords might very well differ from the list posted by the initiator of the article review.
 - (4) Be sure to enter your posting as a reply to the posting in which the article review was initiated.

5) Knowledge base topics

Number	Topic
1	Data mining and data warehousing, including: Technologies Effective uses Application to education
2	Information retrieval, including: Challenges Techniques and technologies Application to education
3	Information policy, including: Security Privacy
4	Knowledge Management, including: Technologies Effective uses Challenges Application to education

Database Analysis and Design

- 1) This assignment is an individual learning experience and will constitute 25% of the course grade (50 points).
- 2) As detailed in the Due Dates section, the deliverables associated with this assignment must be submitted no later than 11:55 pm Fort Lauderdale (Eastern) time on the Sunday of the week due.
- 3) The primary goal for the assignment is to become familiar with the basics of database design and implementation by analyzing a problem in education and designing a computerized database application that could address that problem. This goal can be met in one of two ways:
 - a) Examine and 'backward engineer' an existing database management application in use in the education domain, or
 - b) Design an original computerized database management application that addresses a problem in the education domain
- 4) Regardless if you 'backward engineer' an existing application or design a new application, you will need to submit the following deliverables to the applicable Web CT Assignment Dropbox queue:
 - a) A detailed requirements specification
 - b) An Entity-Relationship diagram
 - c) A partial data dictionary
- 5) Outlines for the contents of all three of these elements can be found in the Course Materials section of the course's Web CT site.

Resource Pack Development

- 1) This assignment is a team-based learning experience and constitutes 25% of the course grade (50 points).
- 2) As detailed in the Due Dates section, the deliverables associated with this assignment must be submitted no later than 11:55 pm Fort Lauderdale (Eastern) time on the Sunday of the week due.
- 3) Each student will be assigned to one of four teams. Each team will be responsible for developing a comprehensive resource pack for educational decision makers on a specific topic. The four topics are:
 - a) Data warehousing and data mining
 - b) Information retrieval
 - c) Information policy, security, and privacy
 - d) Knowledge management
- 4) Although the exact contents of the resource pack will be dependent on the topic and the decisions made by the team, each pack should be based upon research in peer-reviewed literature and include:
 - a) A complete description of the topic including the underlying processes, policies, and technologies
 - b) An analysis of the potential benefits, associated costs, and inherent limitations, and known problems
 - c) An evaluation of how the topic has been implemented successfully (and unsuccessfully) in other fields such as business, health care, and government
 - d) An evaluation of how the topic has already been implemented successfully (and unsuccessfully) in education
 - e) An identification of other problems in education and an analysis and evaluation of how the topic could be of value as a solution
- 5) The exact deliverables for the assignment will vary from team to team. Some items that might be included in the resource pack include:
 - a) One or more literature supported "white papers" or technical briefs
 - b) A well synthesized review of the literature
 - c) An annotated bibliography
 - d) A media-enhanced presentation
 - e) A tutorial
 - f) A web site
- 6) All assignment deliverables are to be developed collaboratively and submitted in the Presentations area of the course's Web CT site.
- 7) Effective collaboration and cooperative work is inherent in this assignment. The primary venues for that collaborative work will be a thread in the Discussions area established for the team.
- 8) Evaluation of this assignment will be based upon the following considerations:
 - a) Content: how thoroughly the topic is explored
 - b) Structure: variety of quality elements included
 - c) Quality: how well each of the elements in the pack is written or, in the case of media-enhanced elements, produced
 - d) Collaborative effort, as evidenced through the threaded discussion forum

- 9) The SCIS Dissertation Guide and the Publication Manual of the American Psychological Association (Fifth Edition) should be used as guides for form, style, and general writing principles in the preparation of the resource packs.
- 10) As a graduate student you are expected to be proficient in the use of the English language. Errors in grammar, spelling, or syntax will affect your grade. As your professor, I will not provide remedial help for writing problems. If you are unable to write clearly and correctly, I urge you to contact the program office for sources of remedial help.
- 11) Each student will be assigned to a team. I will base the assignments on areas of interest, experience in the GSCIS program, and work experience. I will try to take requests for specific team assignments into consideration, but the primary criterion will be to create balanced teams.

Collaboration Reflection

- 1) This assignment is worth 15% of the course grade (30 points).
- 2) As detailed in the Due Dates section, the deliverables associated with this assignment must be submitted no later than 11:55 pm Fort Lauderdale (Eastern) time on the Sunday of the week due.
- 3) This assignment is actually a continuation of the Resource Pack Development assignment in which you will have the opportunity to reflect on the work of your team as a whole and on each team member.
- 4) In this assignment you will be responsible for:
 - a) Describing your team and the collaborative process you experienced.
 - b) Evaluating the functioning of your team as a whole.
 - c) Evaluating the performance of each member of your team (including yourself).
- 5) You will use the rating scale available in the Collaboration Reflection document posted in the Course Documents section of the course's WebCT site.
- 6) Be sure to support your evaluation ratings with data.
 - a) Please note, your data might well be both quantitative and qualitative.
 - b) Be sure to present and analyze each type of data in a manner consistent with reporting the results of scholarly research.
- 7) These papers should be no longer than five (5) double-spaced pages and are to be submitted in the appropriate queue in the Assignment Dropbox area of the course's Web CT site.
- 8) The SCIS Dissertation Guide and the Publication Manual of the American Psychological Association (Fifth Edition) should be used as guides for form, style, and general writing principles in the preparation of the resource packs.
- 9) As a graduate student you are expected to be proficient in the use of the English language. Errors in grammar, spelling, or syntax will affect your grade. As your professor, I will not provide remedial help for writing problems. If you are unable to write clearly and correctly, I urge you to contact the program office for sources of remedial help.

Course Reflection

- 1) The Course Reflection is worth 15% of the course grade (30 points).
- 2) This assignment provides the opportunity for you to reflect on your work in the course. You will be responsible for developing a comprehensive evaluation of your learning experience in the course.
- 3) Although the exact contents and structure of the Course Reflection may well vary from student to student, it should include:
 - a) An evaluation of how well you met the learning outcomes identified for the course and how effective the assignments were in promoting attainment of those outcomes for you.
 - b) Be sure to support your evaluation with data. Please note, your data might well be both quantitative and qualitative. Be sure to present and analyze each type of data in a manner consistent with reporting the results of scholarly research.
- 4) This paper should be no longer than five (5) double-spaced pages and is to be submitted in the appropriate queue in the Assignment Dropbox area of the course's Web CT site.
- 5) The SCIS Dissertation Guide and the Publication Manual of the American Psychological Association (Fifth Edition) should be used as guides for form, style, and general writing principles in the preparation of the resource packs.
- 6) As a graduate student you are expected to be proficient in the use of the English language. Errors in grammar, spelling, or syntax will affect your grade. As your professor, I will not provide remedial help for writing problems. If you are unable to write clearly and correctly, I urge you to contact the program office for sources of remedial help.

Grading Criteria: Evaluating doctoral-level work is quite different from evaluating undergraduate or even masters-level work. At this level, simple mastery of the course content is not adequate; you must also demonstrate the capacity to conduct research in the discipline and make an original contribution. For the purposes of this course, the following will be the "working definition" of doctoral-level scholarship:

- 1) Well written
 - a) Absence of grammatical errors
 - b) Correct word selection and usage
 - c) Logically organized
 - d) Material synthesized into a smoothly-flowing discussion
- 2) Well researched
 - a) Peer-reviewed sources
 - b) Current literature
 - c) Evidence of analysis of the material
 - d) Evidence of evaluation of the material
- 3) Factually sound
 - a) Clear distinction between opinion, theory, and fact
 - b) Essential elements identified
 - c) Zero factual errors
- 4) Demonstrates a potential for original work through

- a) Analysis
- b) Synthesis
- c) Evaluation

Granularity in evaluation is very difficult when reviewing doctoral-level work. There are a great many ways in which an assignment can demonstrate mastery at the doctoral level. In general, I find the following descriptors and grading categories to be the most meaningful:

Fully meets expectations for doctoral work	100% of points possible
Meets expectations with only minor exceptions	90% of points possible
Meets expectations with major exceptions	80% of points possible
Significant exceptions to expectations	70% of points possible
Does not meet expectations for doctoral work	0 points

To recap the relative weighting of the five assignments included in the course:

Assignment	Points Possible
Knowledge Base Development	40
Database Analysis & Design	50
Resource Pack Development	50
Collaborative Reflection	30
Course Reflection	30
TOTAL	200

The following rubric will be following in assigning grades for the course:

Grade	Points	Percent
A	186	93%
A-	180	90%
B+	176	88%
B	166	83%
B-	160	80%
C+	156	78%
C	146	73%
F	Fewer than 146 points earned	

Due Dates

The preponderance of the learning that you will experience in this course will be through a learning-by-doing process. This process has been widely accepted in the adult education literature as preferable to the more traditional, classroom-bound, didactic lecture format. Research has shown that most of us 'older learners' seem to do better when we are actively involved in the process.

The learning-by-doing process does, however, require time. The student must retrieve, experiment with, analyze, and assimilate a great deal of information in order to meet the learning objectives for the course. The retrieval, experimentation, analysis, and assimilation can only be done over the course of time. There truly is no way to cram that process into an 'all-nighter'.

The assignments in this course are designed to direct you to the important concepts inherent in this subject matter. The schedule of due dates is designed to offer the pacing necessary for you to be able to actually retrieve, experiment with, analyze, and assimilate these concepts. The schedule does, in fact, set the environment in which the learning-by-doing process can occur.

Timeliness of submissions is an essential ingredient in the learning necessary for successful completion of this course. I do understand that you all must balance accomplishing academic requirements with family and work responsibilities. You have, however, made a commitment to pursuing this academic endeavor, and can not successfully do so if you do not allocate appropriate time to the process. All work is due by 5:00 pm Fort Lauderdale (Eastern) time on the day indicated in the assignment schedule. I normally download all assignments in the morning of the Monday following the due date. Any work submitted by the time I download the assignments for evaluation will be accepted as a timely submission; no work will be accepted after the time I download the assignments from ESET. Work submitted late will not be evaluated and will receive a grade of zero (0).

Incompletes are granted only under circumstances of extreme hardship. Please see the SCIS incomplete policy.

School and University Policies and Procedures:

Students must comply with the policies published in the school's *Graduate Catalog* and the *NSU Student Handbook*, some of which are included or referenced below. The catalog is at http://www.scis.nova.edu/NSS/pdf_documents/Catalog.pdf . The handbook is at <http://www.nova.edu/cwis/studentaffairs/forms/ustudenthandbook.pdf> .

1. Standards of Academic Integrity For the university-wide policy on academic standards, see the section Code of Student Conduct and Academic Responsibility in the *NSU Student Handbook*. Also see the section Student Misconduct in the GSCIS catalog. Each student is responsible for maintaining academic integrity and intellectual honesty in his or her academic work. It is the policy of the school that each student must:

- Submit his or her own work, not that of another person
- Not falsify data or records (including admission materials and academic work)
- Not engage in cheating (e.g., giving or receiving help during examinations; acquiring and/or transmitting test questions prior to an examination; or using unauthorized materials, such as notes, during an examination)
- Not receive or give aid on assigned work that requires independent effort

- Properly credit the words or ideas of others according to accepted standards for professional publications (see the next section *Crediting the Words or Ideas of Others*)
- Not use term paper writing services or consult such services for the purpose of obtaining assistance in the preparation of materials to be submitted in courses or for theses or dissertations
- Not commit plagiarism (*Merriam-Webster's Collegiate Dictionary* (2004) defines plagiarism as “stealing or passing off ideas or words of another as one’s own” and “the use of a created production without crediting the source.”) (see *Crediting the Words or Ideas of Others* below)

Crediting the Words or Ideas of Others

When using the exact words of another, quotation marks must be used for short quotations (fewer than 40 words), and block quotation style must be used for longer quotations. In either case, a proper citation must also be provided. *Publication Manual of the American Psychological Association, Fifth Edition*, (2001, pp. 117 and 292) contains standards and examples on quotation methods.

When paraphrasing (summarizing, or rewriting) the words or ideas of another, a proper citation must be provided. (*Publication Manual of the American Psychological Association, Fifth Edition* (2001) contains standards and examples on citation methods (pp. 207–214) and reference lists (pp. 215–281)). The *New Shorter Oxford English Dictionary* (1993) defines paraphrase as “An expression in other words, usually fuller and clearer, of the sense of a written or spoken passage or text...Express the meaning (of a word, phrase, passage, or work) in other words, usually with the object of clarification...”. Changing word order, deleting words, or substituting synonyms is not acceptable paraphrasing—it is plagiarism, even when properly cited. Rather than make changes of this nature, the source should be quoted as written.

Original Work

Assignments, exams, projects, papers, theses, dissertations, etc., must be the original work of the student. Original work may include the thoughts and words of others but such thoughts or words must be identified using quotation marks or indentation and must properly identify the source (see the previous section *Crediting the Words or Ideas of Others*). At all times, students are expected to comply with the school’s accepted citation practice and policy.

Work is not original when it has been submitted previously by the author or by anyone else for academic credit. Work is not original when it has been copied or partially copied from any other source, including another student, unless such copying is acknowledged by the person submitting the work for the credit at the time the work is being submitted, or unless copying, sharing, or joint authorship is an express part of the assignment. Exams and tests are original work when no unauthorized aid is given, received, or used before or during the course of the examination, reexamination, and/or remediation.

2. Writing Skills

Students must demonstrate proficiency in the use of the English language. Grammatical errors, spelling errors, and writing that fails to express ideas clearly will affect their grades and the completion of their academic programs. The faculty will not provide remedial help concerning grammatical errors or other writing difficulties. It is the student's responsibility to proofread and edit his or her work which, in both form and content, should be letter-perfect. Work that is not properly edited will be rejected. It is university policy that students must submit their own work, not that of another person. Consequently, they should refrain from using outside editors to redo their work.

Several books contain general guidelines for writing. *On Writing Well* (Zinsser, 2001) is an excellent guide to clear, logical, and organized writing. *The Elements of Style* (Strunk and White, 2000) is a compact handbook on the basic principles of composition, grammar, word usage and writing style. The *Publication Manual of the American Psychological Association* (APA) (2001), a comprehensive handbook on writing for publication, addresses editorial style, grammar, and organization. Give particular attention to Chapter 1, Content and Organization of a Manuscript; Chapter 2, Expressing Ideas and Reducing Bias in Language; and Chapter 3, APA Editorial Style. Chapter 2 also has good advice on writing style and grammar. Another excellent handbook on writing for publication is *The Chicago Manual of Style* (2003). The APA manual and the Chicago manual contain guidance on punctuation, spelling, capitalization, abbreviations, quotations, numbers, statistical and mathematical material, tables, figures, footnotes, appendixes, and reference citations in text. Students should use a good dictionary such as *Merriam-Webster's Collegiate Dictionary* (11th ed.).

3. Disabilities and ADA

NSU complies with the American with Disabilities Act (ADA). The university's detailed policy on disabilities is contained in the *NSU Student Handbook*. Student requests for accommodation based on ADA will be considered on an individual basis. Students with disabilities should discuss their needs with their academic advisors before the commencement of classes if possible.

4. Communication by Email

Students must use their NSU email accounts when sending email to faculty and staff and must clearly identify their names and other appropriate information, e.g., course or program. When communicating with students via email, faculty and staff members will send mail only to NSU email accounts using NSU-recognized usernames. Students who forward their NSU-generated email to other email accounts do so at their own risk. GSCIS uses various course management tools that use private internal email systems. Students enrolled in courses using these tools should check both the private internal email system and NSU's regular email system. NSU offers students web-based email access. Students are encouraged to check their NSU email account and their course management email daily.

5. The Temporary Grade of Incomplete (I)

The temporary grade of Incomplete (I) will be granted only in cases of extreme hardship. Students do not have a right to an incomplete, which may be granted only when there is evidence of just cause. A student desiring an incomplete must submit a written appeal to the course professor at least two weeks prior to the end of the term. In the appeal, the student must: (1) provide a rationale; (2) demonstrate that he/she has been making a sincere effort to complete the assignments during the term; and (3) explain how all the possibilities to complete the assignments on time have been exhausted. Should the course professor agree, an *incomplete contract* will be prepared by the student and signed by both student and professor. The *incomplete contract* must contain a description of the work to be completed and a timetable. The completion period should be the shortest possible. In no case may the completion date extend beyond 30 days from the last day of the term for master's courses or beyond 60 days from the last day of the term for doctoral courses. The *incomplete contract* will accompany the submission of the professor's final grade roster to the program office. The program office will monitor each *incomplete contract*. If a change-of-grade form is not submitted by the scheduled completion date, the grade will be changed automatically from I to F. No student may graduate with an I on his or her record.

6. Grade Policy Regarding Withdrawals

Course withdrawal requests must be submitted to the program office in writing by the student. Requests for withdrawal must be received by the program office by the calendar midpoint of the course (see dates in the academic calendar in the catalog and program brochures or websites). Withdrawals sent by email must be sent from the student's assigned NSU email account. Requests for withdrawal received after 11:59 p.m. EST on the withdrawal deadline date will not be accepted. Failure to attend class or participate in course activities will not automatically drop or withdraw a student from the class or the university. Students who have not withdrawn by the withdrawal deadline will receive letter grades that reflect their performance in the course. When a withdrawal request is approved, the transcript will show a grade of W (*Withdrawn*) for the course. *Students with four withdrawals will be dismissed from the program.* Depending on the date of withdrawal, the student may be eligible for a partial refund (see the appropriate catalog section Refund Policy Regarding Withdrawals).

7. Acceptable Use of Computing Resources

Students must comply with the university's *Policy on Acceptable Use of Computing Resources* (see *NSU Student Handbook*).

8. Academic Progress, Grade Requirements, and Academic Standing

Students must be familiar with the school's policies which are contained in its catalog.

9. Student Research Involving Human Subjects

Students must be familiar with the university's policy (see paragraph in catalog).