

# Teaching Computer Information Systems Via Distance Education: A Researched and Personal Perspective

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## Abstract

Teaching computer information systems via distance education is a challenge for both student and faculty. Much research work has been performed on methods of success for teaching via distance education. Less work has been undertaken on how these methods fit into the unique issues associated with computer information systems. This paper reviews much of the work done on identifying issues of distance education and then presents how the proposed success factors can be implemented in a computer information system program. The author has taught five different distance graduate courses in CIS for over two years and incorporated these factors. The paper concludes with a review of these methods and a sample syllabus.

**Keywords:** online teaching, distance education, computer information systems education, distance education success factors

## 1. BACKGROUND

Distance education has become a significant force in post secondary education in the United States. According to the U.S. Department of Education, National Center for Education Statistics (2003), over two-thirds of all two year and four year degree granting institutions either offered distance education courses in 2000-2001 or planned to do so within the next three years. In public institutions, 90 percent already offered distance education in 2000-2001. Graduate level courses were offered by 52 percent of institutions that had graduate or professional programs. The numbers are even more impressive when viewed by total number of students. There were 2,876,000 enrollments

in college-level, credit -granting distance education courses with 2,350,000 undergraduate enrolments and 510,000 graduate enrolments. There were 118,100 different courses offered, 89,600 of these were undergraduate and 27,500 were graduate. Without question, college distance education has grown to significant proportions. And most of these courses are offered online via the Internet in an asynchronous mode (90 percent). But this phenomenal growth has not come without some issues. Concern has been expressed by many on the quality of distance education vis-à-vis traditional education. There have been many failures in distance education programs. (NEA Higher Education 2002). But limited research as shown that done properly distance education can provide

can provide results similar to traditional education. (Wegner, Holloway, and Garton 1999). Clearly, there are factors that are important in determining the success or failure of a distance education course. This paper is an attempt to identify those factors via two methods. First is a review of the literature on the important factors for online success. Second, the author will recount his incorporation of these factors into his online graduate computer information systems courses providing real world validation as well as a template for other educators.

## 2. REVIEW OF THE LITERATURE

Many authors have attempted to understand the reasons for success or failure in an online and/or distance education course. As a result, many factors have been proposed as important in determining whether a student will succeed or fail in an online distance education course. Alley and Jansak (2001) discuss key concepts in online success but first propose three levels of educational hierarchy. The first is a set of principles that are independent of learning environment or situation. They are the basic concepts that all knowledge transfer is based on. The second level is practice, which is specific to a type of delivery mode such as classroom or distance education. The final level is application specific, which deals with the unique situations in a particular course. My paper discusses general online success factors that are at the second practice level as well as specific application situations and techniques that have proven successful in trying to teach information technology via distance education.

One of the more comprehensive studies on online and distance education success factors was performed by Roblyer and Marshall (2002-2003). Their study was on virtual high schools but many of the concepts of educational success seem to have significant value for all education levels. The authors developed a series of 70 questions that they bundled into a self-titled "Educational Success Prediction Instrument". The questions were a series of statements that students needed to agree or disagree with on a seven point Likert scale. A sample of 135 students from 13 virtual high schools completed this instrument and results were analyzed to determine factors which most influenced either

a pass or fail grade in the school. The discriminate analysis found a high rate of success in determining who would fail or pass based on answers to the 70 question survey. The overall reliability coefficient was .92. The results of this survey indicated that successful online students exhibited a number of specific factors. The challenge then is to structure courses and communications to enhance these factors and as a result, enhance the success rate of our students.

These factors include

- High self esteem
- A belief in oneself
- An understanding of personal responsibility for learning
- Willingness to take risks and make decisions
- Technological skill
- Excellent time management
- High organization skill
- Self-discipline

Alley and Jansak (2001) report the results of a multi-year study of primary research and practical experience factors and summarize their findings in a list of ten keys to quality for online instruction.

Knowledge construction – The authors note that educational theory suggests that all knowledge is based and constructed upon prior knowledge. They then suggest that problem based learning through Internet based exercises can effectively make use of this educational principle.

Student responsibility for learning – In order to encourage student responsibility, a clear web based roadmap and targeted competencies are highlighted.

Student motivation - Distance education provides significant challenges for student motivation as much external motivation is not directly visible as in a classroom setting. The authors suggest practical aides to improve communication, ease frustration, and provide time management assistance.

Reflection – In order to internalize concepts and understand ideas, students need time to reflect. The nature of distance education if properly structured allows time to work

through material at the student's own pace, reviewing items that are unclear, and skipping over already known sections. Time to internalize can be effectively accomplished via distance education.

Learning is unique – Different students learn in different ways, at different times, and at different levels. Good distance education can allow for unique and individualized educational experiences.

Learning requires actual experience – Best learning is accomplished when students actually do and use the information imparted. Good distance education assignments recognize this factor and incorporate “doing” into the learning process. The authors suggest two options – learn then do but also do then learn, experimenting in the realm without prior knowledge. This adds variety and interest to distance educational experiences.

Learning is social and private – There is both a social aspect to learning where individuals can learn from both the instructor and from each other. But also there is time to read and study and comprehend the full material. This is often best accomplished in solitude. The distance ed environment allows ample time for reflection and solitude but specific efforts must be made to allow social interaction and the benefits which can be obtained in this mode.

Preconceptions can impact learning – the authors suggest that preconceived notions can have a significant negative impact on learning and proposes methods for students to self-discover these notions and forego false assumptions.

Iterative learning – As with systems development, rarely does learning progress in a one directional straight line. There are many iterations and spirals in both systems development and education. Many points that are initially explored should be revisited and expanded throughout a term.

Finally they note the unclear aspect of pure learning. Though there are many successful concepts, there are many extraneous factors that can impact the success or failure of an online course. Most of us have had the experience of using the same techniques that were successful in one class but fail miserably

and inexplicably in another. We must be mindful of the dynamic nature of learning and always be ready to alter our strategies to achieve our ultimate goals.

Eastmond (2000) had some similar finding in his research on success factors for Internet distance education. His findings focus on three primary areas – course design, support, and proficiency. Course design is critical to successful Internet course delivery. The factors that are advantages in distance education via online delivery, interaction, collaboration, hands-on learning, and reflection, all must be clearly and explicitly included in the overall course design. These do not just occur naturally in distance education, they must be explicit. Support in the form of individualized communications or help must be aggressively pursued. Again, it will not just naturally occur in an online environment. Finally users must be fully proficient in the technological delivery methods of the course or the course will fail. For information technology professionals or students, this may not seem to be an issue but even the most gifted students can be confounded by obscure and difficult to use interfaces and assignments. One area that is often neglected in an online environment is counseling and advising. Though not easily achieved, it must be emphasized in a distance educational setting.

Soong, Chan, Chua, and Loh (2001) performed a limited survey of students in three online courses to determine success factors in these courses. The authors analyzed results and proposed five factors that positively influenced results in online courses.

Human issues – Instructors must be skilled in motivation and adequately prepared for the online setting. They also must foster an enthusiastic environment.

Technical skills – Both the instructors and the students must understand and be able to easily use the systems.

Technical help – Help must be available to support the students if there are difficulties in utilizing the course website or resources.

Collaboration – High levels of successful communication and collaboration are strong indicators of success.

Mindset – Both the students and the instructors must view the online learning process positively.

Stidham and Frieden (2002) echo many of the concepts put forth by other researchers. Their success factors focus around the primary areas of content, communications, support, preparation, performance, and low class size. Content should be developed based on knowledge already possessed by an instructor. This may include the conversion of a traditional course to online delivery. Preparation is work that needs to be accomplished by the instructor as well as the student. The instructor may visualize the delivery of the course or its conversion from traditional methods. Active preparation including advanced posting of syllabi is encouraged. The instructor must very clearly prepare assignments and all instructions, as there is less opportunity for clarification via online delivery. The instructor must anticipate and prepare for varying technical skill levels of the students and prepare accordingly. The students can prepare by forming of study groups or pre-reading assigned materials. Communications in an online course are vital and should be easy as well as accurate. Brevity and clarity are also traits that should accompany successful online delivery. Openness in communications is vital. Support to the students can take many forms, from technical to advising, to establishment of a friendly environment for participation. The need to emphasize support in all its facets is essential in the somewhat inherently depersonalized world of online education. Students in online environments should clearly know where they stand in terms of performance. There should be clear and frequent feedback on their performance. Finally, as with any class, low class size should be maintained in distance education courses. It is extremely difficult to provide adequate individual attention required when classes are too full. This is perhaps even more critical a factor in distance education versus traditional education due to the reduced nature of student teacher direct interaction.

Piercy (2000) studied the concept of teaching gerontology through distance education and found several successful strategies in this educational endeavor. These successful strategies centered on preparation, rapport, communications, and technical support.

Piercy along with many other educators found that significant and different preparation was involved in developing and conducting an online class. Detailed syllabi, review of technological tools, and extended support materials all were needed. Rapport with students was difficult but essential to online success. Self-introduction is a useful tool as is active solicitation of questions and answers as well as polling for expectations and interests. The course can be somewhat tailored to meet individual needs based on this feedback and create a more successful course. Communications are key again but Piercy emphasizes the two-way nature of communications, as well as timely feedback. Finally, for the course to be successful the technology must be successful and this includes ease of use, reliability, and accessibility of support.

In a computer specific study, McGill, Volet, and Hobbs (1997) studied factors that led to success in distance education computer programming courses. The authors found that the following factors were significantly correlated with completion of an online computer programming course: previous programming experience, entrance scores, estimated hours per week doing practical work, confidence in ability, and expectation levels and internal hard work. Though many of these factors cannot be influenced by course design, others can be incorporated to improve distance education success. Preliminary warm-up exercises can be developed for those with no computer programming experience. Confidence can be affected through strong interaction and communication. Expectation levels and the importance of hard work can be emphasized by the instructor.

Swan, Shea, Fredericksen, Pickett, Pelz, and Maher (2000) studied success in online courses and found these factors as the most influential for online course success – communications between students and instructors, active discussion and communications, an easy to use transparent interface, and consistency in course design over a curriculum (to minimize student confusion).

Jegade, Taplin, Fan, Chan, and Yum. (1999) studied the impact of two factors, locus of control and metacognition, on success in distance education. Locus of control is the be-

belief that a person has control of events that affect his life. Metacognition is the control or consciousness of your thought process. An individual with strong locus of control and metacognition correlated with good performance in distance education classes. This finding suggests that instructors can set up courses to improve student control of their destiny (clear objectives and requirements, clear deadlines) increasing online successes. In addition, more reflective type assignments where individuals can understand their learning process can also be beneficial.

Hillesheim (1998) proposes three problem areas for distance education and proposes strategies for improvement. These problem areas are student issues, student/faculty relationships, and technology itself. Some of the areas of student issues include student attitudes and expectations, time management, and need for feedback. The author suggests that many of these personal issues can be dealt with through proper acceptances and then proper orientation. Faculty issues include responsibility, support, and encouragement. Faculty need to be encouraged to get students' attention, foster feedback, and successfully guide learning through proper presentation among other suggestions. Technology issues suggest the need for a proper environment to conduct the distance education class.

Wang (1994) reviews the literature of the time on distance education and suggests two key factors for distance education support, instructional materials and technological environment and support.

Meyen, Tangen, and Lian (1999) suggest that online courses have two significant areas that need to be addressed namely instructional features and support features. The instructional features include items such as lectures, notes, readings, activities, projects and exams. The support features include syllabi, technical support, and rosters. The authors suggest that the unique nature of online courses requires special detail in each of these areas.

Hara and Kling (2000) surveyed students and their problems with distance education and found that the major problems were lack of instructor feedback, ambiguous instructions and lessons and technical problems.

### 3. MY COURSES AND SELECTED METHODS

Over more than two years I have taught five different graduate courses (and multiple sections) in computer information systems and management information systems as adjunct faculty at Nova Southeastern University, Fort Lauderdale FL and had the opportunity to test many of the researched success factors for online success. The courses I have taught are Management Information Systems, Database Systems, Survey of Programming Languages, Decision Support Systems, and Object-Oriented Applications. I am employed full time at Penn State University - Commonwealth College, Worthington Scranton campus as Assistant Professor - Information Sciences and Technology. In my courses I have tried to incorporate as many of the researched methods as possible and have assessed their relative success and importance. A sample syllabus is included in Appendix 1 of this paper. All my syllabi are available online at <http://www.scis.nova.edu/~peslaka>

First, the syllabi are detailed, structured, and complete. I place all information on text material, assignments and requirements up front so that students can understand from the beginning what is expected of them. Distance education students often have unusual schedules and limited blocks of time. This complete listing of all requirements allows students to plan their term accordingly, resulting in higher completion rates and increased satisfaction.

One of the first items in my syllabus is a complete listing of all the instructional methods that I use for the course. In my database course I detail seven different instructional methods which I utilize in the course. First, the primary content of instruction comes from the clear, easy to understand independent textbook. The selection of a good understandable text is one of the key ingredients in a successful distance education course. A text should lead the student through the material, provide sufficient examples, and result in the student understanding the material. Specific reading assignments are listed. A schedule for the reading assignments is listed in the schedule a little further in the syllabus. Forum postings are listed next. There are specific as-

signments that require forum postings and interchange among students but also asynchronous forums serve as the primary means of communication. Forums allow asynchronous communication among students. Active postings on the board among students are required and encouraged. Forum activity is the measure of the class participation portion of the grade. I post a Please Read thread into which I place all important information that the student needs to know. In addition it serves as a place for motivational and encouragement messages as well as feedback on the course, current topics, and general information. I post to this thread many times each week during the duration of the term, sometimes multiple times during a day. In this course there are also two forum questions posed by me and the students must research and post their answers in the forum. By everyone being able to view each others' responses, our knowledge base is greatly enhanced.

As in traditional courses written assignments are included here. They are primarily based on key content issues and reinforce assigned reading. Posting of answers will be via eset (electronic student/electronic teacher), NSU course management system. In order to fully understand CIS concepts, practical application is essential. Included is a term database project in the relational database of their choice where students can implement the theory they have learned. Concepts plus application are essential in my experience. Since this a graduate course, I emphasize research and writing via an in-depth research paper. I have found that keeping current is one of the most challenging aspects of CIS and this process assists in this skill as well. Finally, I post copious supplemental materials primarily in the forums and usually in a thread named Supplemental Information. In this thread, I post PowerPoint lectures, supplemental reading materials, and useful web links. By the time a term is over there may be dozens of entries in this forum. The concept is to supplement the text and other instructional materials with information from many sources both more current and perhaps more detailed or better explained.

The primary means of communication for the course are e-mail, asynchronous forums, and the NSU course management system, eset or

electronic student/electronic teacher. But I have found that there can never be enough communication. I post my office phone, cell phone, and now AOL IM screen name and encourage students to contact me via any or all these means at any time. Though most use e-mail, the cell phone has been important for student emergencies, especially if I am traveling. I have found that there can never be enough communication channels between instructors and distance learners.

My syllabus posts a specific weekly schedule for all deliverables and assignments including text readings, forum postings, written assignments, paper topics, and final papers and projects. I generally do not permit late assignments unless there is an emergency and I believe this promotes student success by enforcing time management. Students who delay their assignments to late in the term invariably experience the most difficulty.

I clearly explain all grading criteria including specific weight for assignments, a rubric for written work, and clear specific questions. I include all this information in the syllabus to reduce confusion, allow for student time management, and reduce student stress. It appears to be working successfully.

Following this in the syllabus are course rules, NSU policies, and finally a bibliography where appropriate. My complete syllabus is an attempt to foster success in a student by allowing the student control over their work, a clear understanding of expectations, and a variety of pedagogical methods to enhance course objectives.

#### **4. KEY SUCCESS FACTORS I HAVE FOUND**

The lessons learned in my experiences after incorporating research principles into the courses that I have taught can be summarized in six different categories

1. Variety
2. Communication
3. Technical Foundation and Support
4. Empathy
5. Clarity
6. Content

One of the cornerstones of all my distance education courses is variety of instructional methods. Alley and Jansak (2001) suggest that "learning is unique" and everyone learns in different ways. In order to accommodate different learning methods and styles I always incorporate multiple pedagogical methods to accommodate these learning differences. From traditional text readings to hand-on exercises to PowerPoint lectures to research papers, many different approaches to learning course content are utilized to achieve higher distance student success rates. Many of the techniques used are supported by research. Alley and Jansak propose that learning requires actual experience. These are incorporated in hands-on projects. They also suggest iterative learning which I incorporate through the variety of instructional methods which build on but also revisit many previously covered areas. Piercy's (2000) article subtitle is "variety is the key to success." Without traditional lecture as an option and the feedback which can be generated from this, a variety of methods are even more important to ensure instruction.

Perhaps the most important concept that I have found is communication. Without face-to-face communications, other methods must be employed. I emphasize communication upfront through clear written documents such as the course syllabus; through active asynchronous interchange in forums and e-mail; through direct contact between instructor and student via e-mail, forums, office phone, cell phone and now instant messaging. Multiple researchers support the importance of communications for online education including Soong, Chan, Chua, and Loh (2001), Stidham and Frieden (2002), Piercy (2000), and Swan, Shea, Fredericksen, Pickett, Pelz, and Maher (2000).

A solid technical foundation for course communications, delivery, and support is essential to distance education success. Nova Southeastern University has developed over the course of nearly 20 years excellent technical support and I have been fortunate to experience excellent resources in this area. When there have been outages or other problems, I have seen how quickly this can become the distracted focus of the student, significantly reducing opportunity for instruction. Hara and Kling (2000), Hillesheim

(1998), Wang (1994), Meyen, Tangen, and Lian (1999), Piercy (2000), and Soong, Chan, Chua and Loh (2001) all note the importance of technical support to online success.

An often-overlooked element of distance education success is empathy. Having been a product of the distance education experience, I can understand firsthand the difficulties and challenges that distance students face. I have always tried to incorporate that empathy in both course design and course issues. I always try to respond within 24 hours of any questions, problems, or clarification. I try to understand emergency issues when they arise. I structure assignments to try to maximize course content not impose stress. Soong, Chan, Chua, and Loh (2001) suggest that an important element for success is mindset. Both student and faculty need to have a positive mindset. Stidham and Frieden (2002) suggest that a friendly environment encourages success. Piercy (2000) notes that rapport with students is essential to online success. I attempt to encourage this from well before the class even starts by posting syllabi prior to start of class and encouraging dialog before class as well as throughout the term. Roblyer and Marshall (2002-2003) found a belief in oneself and self esteem to be important factors in online success. The instructor needs to foster an environment for these qualities. McGill, Volet, and Hobbs (1997) also note confidence as an important success factor.

Clarity in all phases of the online experience also translates to success. Eastmond (2000) notes the importance of clear and explicit course design. Hara and Kling (2000) found one of the major problems with courses to be ambiguous instructions. Jegede, Taplin, Fan, Chan, and Yum (1999) note that students improve through a strong locus of control and this can be achieved via clear and explicit instruction. My courses always strive to provide clear and unambiguous instructions, objectives, and requirements, providing a complete syllabus as well as frequent updates and explanations.

Last but not least is content. Obviously careful attention needs to be paid to the content of a course. I spend a great deal of time matching course content to course objectives so that students can successfully learn the target knowledge. Stidham and Frieden

(2002) emphasize content. Meyen, Tangen, and Lian stress the importance of lectures, notes, readings and activities. Wang (1994) notes the importance of instructional materials. Alley and Jansak (2001) also expound on many content related issues.

I believe the incorporation of these factors have led to better education for my students. Over the course of many courses and several years, student evaluations have improved and unsolicited student comments have been increasingly favorable by incorporating these key factors.

## 5. CONCLUSION

My experiences with online distance education have been very positive and my results compared with my traditional undergraduate instruction appear to be similar. My methods however are somewhat different in an online world. Many of the key success factors I have noted are much more important in distance education than in traditional. Though I use a course management system (ANGEL) at PSU, it is more of a convenience. The CMS and its technological requirements with distance education are essential. Communications are different and much more challenging in a distance education environment. Without the weekly face to face meetings, you must be deliberate and frequent with all forms of communication including motivation, direction, correction, and instruction. Feedback is more difficult, requires more effort, but is even more critical. Overall, I have found increasing success in an online environment by focusing on the six key success factors.

## 6. REFERENCES

- Alley, Lee and Kathryn Jansak. 2001, "The ten keys to quality assurance and assessment in online learning." *Journal of Interactive Instruction Development*. 3-18.
- Eastmond, Dan 2000, "Enabling student accomplishment online: an overview of factors for success in web-based distance education". *Journal of Educational Computing Research*. 23 (4). 343-358.
- Hara, Noriko and Rob Kling, 2000, "Students' distress with a web-based distance education course: an ethnographic study of participants' experiences." Center for Social Informatics. Available at <http://www.slis.indiana.edu/CSI/WP/wp00-01B.html>
- Hillesheim, Gwen, 1998, "Distance learning: barriers and strengths for students and faculty". *The Internet and Higher Education* 1(1): 31-44.
- Jegede, Olugbemiro, Margaret Taplin, Y.K. Fan, May S.C. Chan, and Jessie Yum, 1999, "Differences between low and high achieving distance learners in locus of control and metacognition". *Distance Education*. 20 (2). 255-273.
- McGill, T.J., S.E. Volet, and V.J. Hobbs, 1997, "Studying computer programming externally: who succeeds?". *Distance Education* 18 (2). 236-256.
- Meyen, Edward, Paul Tangen, and Cindy Lian, 1999, "Developing online instruction: partnership between instructors and technical developers". *Journal of Special Education Technology*. 14(1) 18-31.
- NEA. (2002). "The promise and the reality of distance education". *NEA Higher Education*. 8(3). Available: <http://www.nea.org/he/heupdate/vol8no3.pdf>
- Piercy, Kathleen, 2000, "Teaching gerontology via distance education: variety is the key to success". *Educational Gerontology* 26. 665-675.
- Roblyer, M. and Jon C. Marshall, 2002-2003, "Predicting success of virtual high school students: preliminary results from an educational success prediction instrument". *Journal of Research on Technology in Education* 35 (2). 241-255.
- Soong M.H. Benson, Hock Chuan Chan, Boon Chai Chua, and Koah Fong Loh, 2001, "Critical success factors for on-line course resources". *Computers and Society* 36. 101-120.



- Stidham, Sue. and Brenda Frieden, 2002, "Ten easy steps to online success". Business Education Forum. 47-49.
- Swan, Karen, Peter Shea, Eric Fredericksen, Alexandra Pickett, William Pelz, and Greg Maher, 2000. "Building knowledge building communities: consistence, contact, and communication in the virtual classroom". Journal of Educational Computing Research. 23 (4) 359-383.
- U.S. Department of Education, National Center for Education Statistics. 2003. Distance Education at Degree-Granting Postsecondary Institutions: 2000-2001, NCES 2003-017, by Tiffany Waits and Laurie Lewis. Project Officer: Bernard Greene. Washington, DC Available at <http://nces.ed.gov/pubs2003/2003017.pdf>
- Wang, Shousan, 1994, "Basic considerations of distance education programs". International Journal of Instructional Media. 21 (1) 53-60.
- Wegner, Scott, Ken Holloway, and Edwin Garton, 1999, "The effects of Internet-based instruction on student learning". Journal of Asynchronous Learning Networks. 3(2). 98-106.

**7. APPENDIX 1 SAMPLE SYLLABUS**

Graduate School of Computer and Information Sciences

**Course Syllabus****MMIS 630 Database Systems(3 credits)  
June 23, 2003 - September 12, 2003  
2003****Instructor:** Alan Peslak, Ph.D., Adjunct Professor**Mailing Address:** Nova Southeastern University  
Graduate School of Computer and Information Sciences  
Master's Program Office  
6100 Griffin Road  
Ft. Lauderdale, FL 33314**Email:** [peslaka@nova.edu](mailto:peslaka@nova.edu) (Contact is best achieved via email)**Cell Phone:** XXX-XXX-XXX**PSU Office Phone:** 570-963-2640**PSU Fax:** 570-963-2535**Web Page:** <http://www.scis.nova.edu/~peslaka>**Class Location and Format:** Online**Class website:** <http://www.scis.nova.edu/~peslaka/mcis630.doc>**Course Description:**

MMIS 630 Database Systems (3 credits)

The application of database concepts to management information systems. Design objectives, methods, costs, and benefits associated with the use of a database management system. Tools and techniques for the management of large amounts of data. Database design, performance, and administration. File organization and access methods. The architectures of database systems, data models for database systems (network, hierarchical, relational, and object-oriented model), client-server database applications, distributed databases, and object-oriented databases.

**Required Textbook:**Database Systems: A Practical Approach to Design, Implementation, and Management,  
Third EditionThomas Connolly and Carolyn Begg  
2002Addison Wesley Publishing Company  
ISBN 0-201-70857-4

**Exit Competencies:****Upon completion of this course, the student will comprehend the following:**

Upon successful completion of this course, the student will understand database systems design and management and be able to implement database concepts to solve information technology problems.

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**Instruction Methods and Tools:**

In order to provide a comprehensive instruction set, seven different instruction tools will be used.

Text reading – The Connolly text presents an excellent and relatively current overview of the concepts underlying databases. A complete reading of the text is encouraged. We will specifically cover and perform exercises from chapters 1 -3, 8, 9, 11, 13, 14-16, 19, 25, and 29 though projects may require detail presented in other chapters.

Forum postings - Allows asynchronous communication among students.. Active postings on the board among students are required and encouraged. Forum activity will be the measure of the class participation portion of the grade.

Forum questions – Two specific assignment will be required discussing a specific database question.

Written assignments – Enhance and improve knowledge of the course material as well as develops specific analytical and writing skills.

Database project – A database project implementation will be required to determine practical competency in database design and implementation.

Formal research – A research paper is required to develop the student's research abilities, writing abilities, and also develop expertise in a specific DB topic.

Supplementary materials – Other materials will be provided by the instructor including explanations, PowerPoint slides, web resources, and exercise answers in the forums.

Assignments are to be handed in through the ESET web-based utility or posted to the class forums under the appropriate topic. Forum assignments must have the assignment clearly identified in the subject label. Every submission must have a header that contains your name, usercode, and the assignment number. Each written ESET assignment MUST be handed in as ONE submission through ESET.

Directions for submitting work through the Web-based Electronic Student (ESET) can be found at:

<http://www.scis.nova.edu/Orientation/eset.html> Directions on using and submitting to the class forums can be found at

<http://www.scis.nova.edu/Orientation/forums.html> A student may neither do additional work nor repeat an assignment to raise a final grade.

Examinations and Quizzes: No written examinations are given. The course grade is based on the criteria shown in the Grading Criteria. There is no final examination. The database project and the research paper will serve as the summative evaluation along with the required written assignments. Check each assignment as listed on the Schedule to find out the tasks and grading distribution.

**Assignments:**

The assignments for this class and the guidelines for the Research Paper are included in this document.

As noted, the requirements for this course are organized into several categories:

- Assignments and problem sets from the textbook.
- Practical implementation – This assignment tests the student’s ability to design and implement a database application in the relational or object-oriented database of your choice. (Microsoft Access is perfectly acceptable)
- A Research paper in the field of databases is also required.

The schedule for submission of the course requirements follows:

**SCHEDULE**

Week	Text Reading Assignment Chapters	Forum Q	Forum Posting	Written Assign ESET Submission	DB Project ESET	Language Evaluation Paper ESET Submission
6-23 to 6-28	1-2					
6-29 to 7-5	3			Asgn 1		
7-6 to 7-12	5	FQ 1				Database Paper Topic
7-13 to 7-19	8			Asgn 2		
7-20 to 7-26	9, 11					
7-27 to 8-2						
8-3 to 8-9	13, 14	FQ 2		Asgn 3		
8-10 to 8-16	15					
8-17 to 8-23	16			Asgn 4		
8-22 to 8-30	19, 25					
8-31	29			Asgn 5		Final Paper

to 9-6						
9-7 to 9-12			Due		Project	
Total points		10	5	40	20	20

C = Chapter, FQ is Forum Question, IS is Internet Search, Asgn = Assignment

Forum means the assignment is to be posted in the Forums under the proper thread and with the proper heading. ESET means the assignment is to be submitted via SCIS ESET utility.

Total points are equally divided among assignments.

All assignments are due on the last day of the week noted in the schedule by midnight Eastern Standard Time (Saturday except for September 12, Friday).

All deadlines are final. Partial credit will be given for incomplete assignments. Please plan accordingly. Masters level students are expected to be able to meet deadlines. Sufficient notice is given for deadlines for all assignments, therefore no assignments will be accepted after the due date and late submissions will be graded as zero. Extreme hardships and emergencies will be considered on a case-by-case basis. Change in work assignments or work related travel will not be accepted as emergencies.

*Written Assignments – Submit to ESET*

**Written ASSIGNMENT-1 – Introduction, Environment, and Relational Model**

Chapter 1 Exercise 4  
 Chapter 2 Exercises 3, 8, 9  
 Chapter 3 Describe the basic concept of the relational database model.

**Written ASSIGNMENT-2 – SQL**

Chapter 5 Exercises 5-7 through 5-28

**Written ASSIGNMENT 3 – Database types, planning and design, E-R Diagrams**

Chapter 8 Exercise 8-7, 8-8, 8-10, 8-13  
 Chapter 9 Exercise 14  
 Chapter 11 Exercise 11-12

**Written ASSIGNMENT-4 – E-R Diagrams, Normalization, conceptual and physical model**

Chapter 13 Exercise 16  
 Chapter 14 Exercise 18  
 Chapter 15 Exercise 15-12  
 Chapter 16 Exercise 16-11, 12

**Written ASSIGNMENT-5 – Locking, Object oriented, XML**

Chapter 19 Exercise 21  
 Chapter 25 Exercise 14

Chapter 29 Exercise 10, 11

**Grading Criteria:**

**SCALE**

<b>GRADE</b>	<b>TOTAL PERCENT</b>
A	93.0-100
A-	90.0-92.9
B+	87.0-89.9
B	83.0-86.9
B-	80.0-82.9
C+	77.0-79.9
C	73.0-76.9
C-	70.0-72.9
F	0.0-69.9

**General grading rubric for research paper**

Product (Project)	Very Poor or Absent	Below Avg.	Satisfactory	Good	Excellent
1. Mechanics of writing, APA style, grammar, punctuation	0	2	3	3.5	4
2. Organization and structure	0	2	3	3.5	4
3. Creativity and/or insight	0	2	3	3.5	4
4. Demonstrates knowledge	0	2	3	3.5	4

Written assignments will be either grades according to whether they are correct or not or as above if discussion questions.

**Class/Course Rules:**

Mutual respect and courtesy are expected.

Every effort has been made to prepare this syllabus in final form. Nevertheless, the Professor reserves the right to make changes as may be required to the online version of the course syllabus. The online syllabus defines the requirements for this course. Student will be notified of changes by electronic mail.

**Policies**

**1. Academic Integrity and Student Original Work** (See Catalog for additional policies, especially *Policy on Acceptable Use of Computing Resources*, and *Policy on the Use of Material in Web Pages*.)

**Standard NSU Policy**

**2. Writing Skills:** Standard NSU Policy

**3. The Grade of Incomplete (I):** Standard NSU Policy

**4. Withdrawal:** Standard NSU Policy

**Bibliography:**

An excellent bibliography can be found at the end of the text in the chapter references. The periodicals referenced would be excellent sources. Articles and journals referenced in these publications are also good sources of more journals.