Nova Southeastern University  
Graduate School of Computer and Information Sciences  

MMIS 642 – Data Warehousing – 3 Credits  
This Course Is Taught Online and On-Campus  

Professor: PHYLLIS CHASSER, Ph.D.  
Mailing Address: Nova Southeastern University  
Graduate School of Computer and Information Sciences  
Master's Program Office  
3301 College Avenue  
Fort Lauderdale, FL 33314  
(954) 262-2000  
1-800-986-2247  
Email: chasserp@nova.edu (Contact is best achieved via email)  
Phone: 954 769-0413  
Web Page: http://scis.nova.edu/~chasserp  

Course Description:  
This course includes the various factors involved in developing data warehouses and data marts: planning, design, implementation, and evaluation; review of vendor data warehouse products; cases involving contemporary implementations in business, government, and industry; techniques for maximizing effectiveness through OLAP and data mining.  

Required Textbooks:  
Ponniah, Paulraj  
Data Warehousing Fundamentals for IT Professionals  

Ramesh Sharda, Dursun Delen and Efraim Turban  
Business Intelligence: A Managerial Perspective on Analytics  

Tableau Software  
Student license information will be given out during the course for the analytics assignment.  

Learning Outcomes and Objectives  
The use of a Data Warehouse to assist in the decision making processes has become a major force for many organizations. Its use has been growing in popularity and has become an essential part of many companies. Upon completion of this course, the student will comprehend the following:  
- concepts related to data warehousing, including its specific terminology  
- theories, techniques, planning and requirements to create its unique design  
- preparation and design of data for decision making  
- components of a data warehouse including its infrastructure and architecture  
- information access and delivery including data mining techniques  
- implementation and maintenance  
- management of the data warehouse  
- business intelligence as it is used to assist in decision support
COURSE OUTLINE:
DATA WAREHOUSING

PART 1 – OVERVIEW AND CONCEPTS
The Compelling Need For Data Warehousing
Data Warehouse: The Building Blocks
Trends In Data Warehousing

PART 2  PLANNING AND REQUIREMENTS
Planning And Project Management
Defining The Business Requirements
Requirements As The Driving Force For Data Warehousing

PART 3 – ARCHITECTURE AND INFRASTRUCTURE
Architectural Components
Infrastructure As The Foundation For Data Warehousing
The Significant Role Of Metadata

PART 4 – DATA DESIGN AND DATA PREPARATION
Principles Of Dimensional Modeling
Dimensional Modeling: Advanced Topics
Data Extraction, Transformation, And Loading
Data Quality: A Key To Success

PART 5 – INFORMATION ACCESS AND DELIVERY
Matching Information To The Classes Of Users
OLAP In The Data Warehouse
Data Warehousing And The Web
Data Mining Basics

PART 6 – IMPLEMENTATION AND MAINTENANCE
The Physical Design Process
Data Warehouse Deployment
Growth And Maintenance

BUSINESS INTELLIGENCE
An Overview of Business Intelligence, Analytics, and Decision Support
Data Warehousing
Business Reporting, Visual Analytics, and Business Performance Management
Data Mining
Text And Web Analytics

INSTRUCTION METHODS AND TOOLS:
Written Assignments: All written assignments are to be handed in through BLACKBOARD. Each assignment MUST be handed in as ONE combined submission through BLACKBOARD and must be submitted by midnight of the date due. Every submission must have a header that contains your name, userid, and the assignment number.

Examinations: There are two online examinations given for this course. The Midterm and Final Exam will be taken through Blackboard. It will be made available one week before the due date. The exam must be completed in one sitting. You will have up to three hours to take each exam. Therefore, it will be necessary to put aside a three hour block of time to answer the questions. In other words, if you start the exam at 5 pm on April 1, you will have until 8 pm on April 1. If you have technical difficulties, or communication problems, please notify izone to correct the problems. All problems of this type should also be reported to Dr. Chasser. If there are problems, it may be possible to reset the time allotted. This can only be approved by Dr. Chasser.

Course Component Points
<table>
<thead>
<tr>
<th>ITEM</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Written Assignments from Text Books (Four @ 12 points each)</td>
<td>48 points</td>
</tr>
<tr>
<td>Tableau Assignment</td>
<td>2 points</td>
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<tr>
<td>Analysis Paper</td>
<td>10 points</td>
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<tr>
<td>Midterm Exam</td>
<td>20 points</td>
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<tr>
<td>Final Exam</td>
<td>20 points</td>
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</table>

**Midterm and Final Exam**

No Exam Will Be Accepted After Midnight [Eastern Standard Time] of the Date Due.

**GRADING CRITERIA:**

The course grade is based on the criteria shown in the table below. Check each assignment as listed on the Assignment Instructions below to find out the exact tasks. A student may neither do additional work nor repeat an assignment to raise a final grade.

**Grading Scale**

<table>
<thead>
<tr>
<th>A</th>
<th>A-</th>
<th>B+</th>
<th>B</th>
<th>B-</th>
<th>C+</th>
<th>C</th>
<th>C-</th>
<th>F</th>
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<tr>
<td>100-94</td>
<td>93-90</td>
<td>89-87</td>
<td>86-83</td>
<td>82-80</td>
<td>79-77</td>
<td>76-73</td>
<td>72-70</td>
<td>69-0</td>
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</tbody>
</table>

Note that this grading scale does not contain a grade of "D". This reflects compliance with the SCIS grading scale.

**GRADING RUBRIC**

<table>
<thead>
<tr>
<th></th>
<th>Meets Expectations</th>
<th>Partially Meets Expectations</th>
<th>Fails to Meet Expectations</th>
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</thead>
<tbody>
<tr>
<td><strong>Content</strong></td>
<td>Addresses all aspects of assignment in sufficient depth</td>
<td>Addresses most aspects of assignment in sufficient depth</td>
<td>Does not address most aspects of assignment and/or fails to do so in sufficient depth</td>
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<tr>
<td></td>
<td>Supports main points with references, examples, illustrations, and explanations</td>
<td>Supports main points with either examples, illustrations, and explanations, or with published references but does not use both</td>
<td>Does not support main points by using references, examples, illustrations, or explanations</td>
</tr>
<tr>
<td><strong>Organization of each assignment question</strong></td>
<td>Demonstrates understanding and application of the information</td>
<td>Demonstrates understanding of information, but fails to include the application of the topic</td>
<td>Does not demonstrate understanding or application of the information</td>
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<td></td>
<td>Purpose is clearly identifiable and well developed; introductory comments provide sufficient background on the topic and preview major points. Conclusion and recommendations follow logically</td>
<td>Either the central theme/purpose is clearly identifiable and well developed; or the introductory comments provide sufficient background on the topic and preview major points, but not both Conclusion</td>
<td>Purpose is not clearly identifiable nor well developed; introductory comments do not provide sufficient background on the topic nor preview major points Conclusion and recommendations do not follow logically</td>
</tr>
<tr>
<td>Structure and Readability</td>
<td>Meets minimum assigned length</td>
<td>Does not meet minimum assigned length</td>
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<td>Subsequent sections</td>
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<td>Subsequent sections do not</td>
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<tr>
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<td>Usually the structure is</td>
<td>Sometimes the structure</td>
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<td>clear, logical, and easy to</td>
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<tr>
<td>follow; smooth transition</td>
<td>follow, with smooth</td>
<td>follow; seldom includes</td>
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<tr>
<td>between paragraphs</td>
<td>transitions between</td>
<td>smooth transitions between</td>
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<td>Numerous errors in spelling,</td>
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<td>and grammar</td>
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<td>Paper is laid out</td>
<td>Paper is laid out effectively,</td>
<td>Paper is not laid out effectively,</td>
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<td>effectively—uses headings</td>
<td>but could make better use of</td>
<td>fails to use headings and missing</td>
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<tr>
<td>Paper is professional in</td>
<td>headings and other APA</td>
<td>other APA style requirements</td>
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<td>appearance and</td>
<td>style requirements</td>
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<td>demonstrates attention to</td>
<td>Paper is professional in</td>
<td>Paper is not professional in</td>
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<td>detail; tone of voice is</td>
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<td>appearance and demonstrates a lack</td>
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<td>attention to detail; but tone</td>
<td>of attention to detail; tone of</td>
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<td>of voice is inappropriate to</td>
<td>voice is inappropriate to the</td>
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<td>assignment</td>
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<td>audience, content, and assignment</td>
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<tr>
<td>Format &amp; References</td>
<td>Title page complete</td>
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<td>Title page incomplete or</td>
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<tr>
<td>References required</td>
<td>Number of sources referenced</td>
<td>Does not include references to</td>
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<tr>
<td>number of sources</td>
<td>is fewer than required</td>
<td>outside sources</td>
<td></td>
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<tr>
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<td>Most references cited</td>
<td>References not cited correctly</td>
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<td>correctly in APA format</td>
<td>APA format nor are intext citations</td>
<td></td>
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<tr>
<td>including intext citations</td>
<td>including intext citations</td>
<td>provided or no References cited</td>
<td></td>
</tr>
</tbody>
</table>

Total % Earned

| 90 - 100 | 75 - 89 | 0 - 74 |

Assignments turned in after the due dates, if not pre-approved, will be graded down according to the following Schedule:

- During the first week after the due date - 2 points
- No Assignments Will Be accepted after the first Week of the Date Due without prior authorization of the Professor.

Analysis Assignments Guidelines:
Refer to the detailed Assignments Instructions to determine the specific topics assigned. Be as thorough as possible in your analysis. All work should follow the APA standards which can be found at http://www.apa.org. In the work place you are often judged by how you write. Therefore learning to write grammatically correct sentences, with correct spelling should be an integral part of everything you do. I will take grammar and spelling into account when grading your assignments.
MMIS642 - ASSIGNMENT DETAILS

General Instructions:
Each assignment is to be submitted as a single Microsoft Word Document (.doc) using BlackBoard. All sections of each assignment must be handed in the one submission. Every submission must have a header that contains your name, login ID, and the assignment number. Answers to Text Exercises must be sufficient to completely respond to the exercise. All homework is to be submitted in Word format. If there are diagrams or reports, do a screen print, then copy and paste into your word document.

See Assignment Tab in Blackboard for Assignments.

ASSIGNMENT-1

<table>
<thead>
<tr>
<th>Data Warehousing Text -</th>
<th>Business Intelligence Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Chapters 1 - 4</td>
<td>• Chapters 1 - 2</td>
</tr>
</tbody>
</table>

Data Warehousing Text
Exercise #4 – pg. 21
For an airlines company, how can strategic information increase the number of frequent flyers? Discuss giving specific details.

Exercise #4 – pg. 44
For an airlines company, identify three operational applications that would feed into the data warehouse. What would be the data load and refresh cycles for each?

Exercise 3 – pg. 70
Explain how and why parallel processing can improve performance for data loading and index creation.

Exercise #3 – pg. 97
You are the data transformation specialist for the first data warehouse project in an airlines company. Prepare a project task list to include all the detailed tasks needed for data extraction and transformation.

Business Intelligence Text
Question 1 & 2 - page 22 - Application Case 1.3
1. What are the desired functionalities of a reporting tool?
2. What advantages were derived by using a reporting tool in the case?

Question 4 & 5-page 90-91
4. Identify the major differences between the traditional data warehouse and a real-time data warehouse, as was implemented at Continental.
5. What strategic advantage can Continental derive from the real-time system as opposed to a traditional information system?

ASSIGNMENT-2

<table>
<thead>
<tr>
<th>Data Warehousing Text</th>
<th>Business Intelligence Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Chapters 5 - 10</td>
<td>• Chapter 3 - Including Case Study 3.8</td>
</tr>
</tbody>
</table>

Data Warehousing Text
Exercise #2 pg. 120
You are the vice president of marketing for a nation-wide appliance manufacturer with three production plants. Describe any three different ways you will tend to analyze your sales. What are the business dimensions for your analysis?

Exercise #4 pg. 137-138
You are the manager for the data warehouse project at a retail chain with stores all across the country and users in every store. How will you ensure that all the details necessary to decide on the DBMS are gathered during the requirements phase? Write a ‘memo’ to the Senior Analyst directly responsible to coordinate the requirements definition phase.

Exercise #2 pg. 161
You have recently been promoted to administrator for the data warehouse of a nationwide automobile insurance company. You are asked to prepare a checklist for selecting a proper vendor tool to help you with the data warehouse administration. Make a list of the functions in the management and control component of your data warehouse architecture. Use this list to derive the tool-selection checklist.
Exercise #5 pg. 221
As the data acquisition specialist, what types of metadata can help you? Choose one of the data acquisition processes and explain the role of metadata in that process.

Exercise #3 pg. 248
What is a factless fact table? Design a simple STAR schema with a factless fact table to track patients in a hospital by diagnostic procedures and time.

Business Intelligence Text
Application Case 3.8 - Question 1,2,3. page 138-139
1. Who are the customers for Expedia.com? Why is customer satisfaction a very important part of their business?
2. How did Expedia.com improve customer satisfaction with scorecards?
3. What were the challenges, the proposed solution, and the obtained results?

ASSIGNMENT-3

<table>
<thead>
<tr>
<th>Data Warehousing Text</th>
<th>Business Intelligence Text</th>
<th>TABLEAU Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Read Chapters 11 – 15, 18</td>
<td>• No Assignment</td>
<td>Instructions to follow</td>
</tr>
</tbody>
</table>

Data Warehousing Text
Exercise #2 pg. 279
Assume you are in the insurance business. Find two examples of type 2 slowly changing dimensions in that business. As an analyst on the project, write the specifications for applying the type 2 changes to the data warehouse with regard to the two examples.

Exercise #5 pg. 314
You are the staging area expert on the project team for a large toy manufacturer. Discuss the four modes of applying data to the data warehouse. Select the modes you want to use for your data warehouse and explain the reasons for your selection.

Exercise #2 pg. 337
Assume that you are the data quality expert on the data warehouse project team for a large financial institution with many legacy systems dating back to the 1970’s. Review the types of data quality problems you are likely to have and make suggestions on how to deal with those.

Exercise #2 Page 372
Compare the usage and value of information in the data warehouse with those in operational systems. Explain the major differences. Discuss and give examples.

Exercise #2 Page 405
As a senior analyst on the project team of a publishing company exploring the options for a data warehouse, make a case for OLAP. Describe the merits of OLAP and how it will be essential in your environment.

Exercise #2 Page 487
Prepare an outline for a standards manual for your data warehouse. Consider all types of objects and their naming conventions. Indicate why standards are important. Produce a detailed table of contents.

Business Intelligence Text (No Assignment)

ASSIGNMENT-4

<table>
<thead>
<tr>
<th>Data Warehousing Text</th>
<th>Business Intelligence Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Read Chapters 16, 17, 19, 20</td>
<td>• Read Chapters 4 - 6 (Including Case Study at end)</td>
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</tbody>
</table>

Data Warehousing Text
Exercise #5 Page 427
As the web specialist on the project team, prepare a document highlighting the major considerations for Web-enabling your data warehouse. Just list the considerations, not the implementation techniques.

Exercise #5 Page 460
In your project you are responsible for analyzing the requirements and selecting a toolset for data mining. Make a list of the criteria you will use for the toolset selection. Briefly explain why each criterion is necessary.
Exercise #4 Page 509
What are the considerations for deploying the data warehouse in stages? Under what circumstances is staged deployment recommended? Describe how you will plan to determine the stages.

Exercise #2 Page 525
You are specifically assigned to improve the query performance in your data warehouse deployed about six months ago. How will you plan for the assignment? What are the types of statistics you will need? Create a plan.

Business Intelligence Text
Question 14 Page 197
What are the privacy issues with data mining? Do you think they are substantial?

Application Case 5.6 – Questions 1,2 -. page 231-232
1. How did Whirlpool use capabilities of text analytics to better understand their customers and improve product offerings?
2. What were the challenges, the proposed solution, and the obtained results?

TABLEAU ASSIGNMENT INSTRUCTIONS:
You are to create a tabular report and two graphs that Superstore, a database provided by Tableau, could utilize for its strategic planning. Write a page that describes your report and graphs. Discuss why your graphs would be helpful to Superstore, and how it will help their business. Detailed instructions on the Tableau Software homework are in Blackboard.

Tableau Software is a Business Intelligence tool that works on top of any data warehouse. They have made available to students databases and software to build queries and visuals. Tableau's data visualization software has been provided through the Tableau for Teaching program for your use… http://www.tableausoftware.com/data-visualization-software

INDIVIDUAL ANALYSIS PAPER INSTRUCTIONS:
Choose one of the papers displayed on the Blackboard site under ‘Case Study Papers’ or the Envirofacts Data Warehouse to analyze. Follow the instructions below to analyze what has been done with their warehouse. If you would like to choose a paper of your own, you may do so with the approval of Dr. Chasser.

The Envirofacts Data Warehouse, Environmental Protection Agency, is available at http://www.epa.gov/enviro. This is a data warehouse for public use. Enter your locality and search through the online data warehouse. You may have to modify your locality to find an area near to you. Experiment with the various online tools. Use your experience to write your paper.

Report Format for Individual Papers
Your assignment should be at least 3 pages, but no more than 5 pages about the chosen paper. The important thing in developing your paper is to be "thorough" and "accurate". You should read the selected paper several times before you start writing, and take some time off in between the reading and the reporting so you let some thought and incubation take place. The questions listed below do not necessarily have EXACT answers; however that doesn't mean that any sloppy thinking will do.

Begin with the background of the company being written about. Use the internet to research any information not available in the paper. Include information on their products, their organization structure, their financial/stock performance and their competitors.

Include all of the following items with your analyses. Each item should be the header of a paragraph.

   a. Key business tasks supported
   b. Key business users supported
   c. Describe the general architecture
d. Products utilized

e. Business decisions driving the decision for a data warehouse

f. Key business objectives

g. Expected benefits

h. Training/education required

i. Outside services used during the implementation

j. From YOUR perspective, was the project a success?

k. If the system went down for three hours, what kind of ‘pain’ would the company feel?

l. Major success factors

m. Major risk factors

n. What were the lessons learned?

o. What enhancements do you see for this system?

p. What other materials would you have liked to have in order to answer more effectively?

Class/Course Policies:

Class/Course Policies:

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/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 or consult paper writing services, software coding services, or similar services for the purpose of obtaining assistance in the preparation of of materials to be submitted for course assignments 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, Sixth Edition, 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, Sixth Edition contains standards and examples on citation methods. 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.

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).

10. Responsibility for Payment of Tuition and Fees
Once registered, students are personally responsible for the payment of their tuition and fees. Returned checks, cancelled credit cards, employer or agency refusal to pay, ineligibility for financial aid, and other reasons for non-payment may result in a direct bill to the student, and/or referral to a collection agency.

Payment and refund policies are based on the view that a student registering for a class is reserving a place in that class and that tuition and fees cover the opportunity to secure that place in the class. Since no other person can purchase that place, the student is responsible for the tuition and fees associated with it. Simply not attending does not constitute a reason for non-payment.

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Phyllis Chasser, Ph.D., Adjunct Professor
Nova Southeastern University
Graduate School of Computer and Information Sciences
1-800-986-2247 ext 2063
chasserp@nova.edu
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