Nova Southeastern University
College of Engineering and Computing

MMIS 642 – Data Warehousing – 3 Credits

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Phone: 954 769-0413
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Class Location/Format: On-Campus & Online

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. Additional information on the use of Business Analytics derived from data warehousing.

Required Textbooks:
Data Warehousing Fundamentals for IT Professionals
Ponniah, Paulraj
**This text book is also available as an e-text from: https://www.vitalsource.com/products/data-warehousing-fundamentals-for-it-professionals-paulraj-ponniah-v9781119096450

Software:
Tableau Software: Student license information is available through Blackboard for the analytics assignment. You may also use your own software if available.

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 and analytics 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
An Introduction to Business Intelligence

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 & Information Mining
Business Intelligence Reporting

PART 6 – IMPLEMENTATION AND MAINTENANCE
The Physical Design Process
Big Data Technologies
Data Warehouse Deployment
Growth and Maintenance

INSTRUCTION METHODS AND TOOLS:

MMIS642 - ASSIGNMENTS

GENERAL INSTRUCTIONS:
All sections of each assignment must be handed in as one submission in a Microsoft Word Document in Blackboard. 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. If there are diagrams or reports from a source, do a screen print, then paste it into your MS Word document. Any item pasted in must have discussion to justify its inclusion. Assignments MUST be submitted by midnight of the date due. Please include the assignment question before each response.

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 block of time to answer the questions. For example, if you start the exam at 5 pm on April 1, you will have until 8:00 pm on April 1. If you have technical difficulties or communication problems, please notify izone to correct the problems. All issues 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. No Exam Will Be Accepted After Midnight [Eastern Time] of the Date Due.

COURSE COMPONENT POINTS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Written Assignments from Text Books (Assn 1)</td>
<td>12 points</td>
</tr>
<tr>
<td>Individual Written Assignments from Text Books (Assn 2)</td>
<td>12 points</td>
</tr>
<tr>
<td>Individual Written Assignments from Text Books (Assn 3)</td>
<td>15 points</td>
</tr>
<tr>
<td>Analysis / Research Paper</td>
<td>15 points</td>
</tr>
<tr>
<td>Tableau Assignment</td>
<td>6 points</td>
</tr>
<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>
ANALYSIS / RESEARCH PAPER ASSIGNMENT GUIDLINES:
Refer to the detailed Assignments Instructions in Blackboard to determine the specifics of the paper. Be as thorough as possible in your research and analysis. Referenced and cited work should follow the APA standards which can be found at http://sherman.library.nova.edu/sites/apa/. 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.

TABLEAU ASSIGNMENT:
Tableau Software is a Business Intelligence tool that works on top of any data warehouse. Tableau has made software with a sample databases available to students to build queries and analytics. Tableau's data visualization software has been provided through the “Tableau for Teaching” program for your use.

Assignments turned in after the due dates, if not pre-approved, may 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.

GRADING CRITERIA:
The course grade is based on the criteria shown in the table below. Check each assignment carefully as listed on Blackboard 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>Grade</th>
<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>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<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>
</tr>
</tbody>
</table>

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

GRADING RUBRIC

<table>
<thead>
<tr>
<th>Content</th>
<th>Meets Expectations</th>
<th>Partially Meets Expectations</th>
<th>Fails to Meet Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</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>
</tr>
<tr>
<td>Content</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>Content</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>
</tr>
<tr>
<td><strong>Organization of each assignment question</strong></td>
<td><strong>Purpose is clearly identifiable and well developed; introductory comments provide sufficient background on the topic and preview major points. Conclusion and recommendations follow logically</strong></td>
<td><strong>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 and recommendations merely summarizes what has been previously stated</strong></td>
<td><strong>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</strong></td>
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<tr>
<td><strong>Subsequent sections develop/support the central theme of the assigned questions</strong></td>
<td><strong>The majority of the subsequent sections develop/support the central theme of the assigned questions</strong></td>
<td><strong>Subsequent sections do not develop/support the central theme of the assigned questions</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Structure is clear, logical, and easy to follow; smooth transition between paragraphs which help maintain the flow of thought</strong></td>
<td><strong>Usually the structure is clear, logical, and easy to follow, with smooth transitions between paragraphs to help maintain the flow of thought</strong></td>
<td><strong>Sometimes the structure is clear, logical, and easy to follow; seldom includes smooth transitions between paragraphs to help maintain the flow of thought</strong></td>
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</tr>
<tr>
<td><strong>Readability and Style</strong></td>
<td><strong>Meets minimum assigned length</strong></td>
<td><strong>Meets minimum assigned length</strong></td>
<td><strong>Does not meet minimum assigned length</strong></td>
</tr>
<tr>
<td><strong>No major errors in spelling, punctuation, and grammar</strong></td>
<td><strong>Few errors in spelling, punctuation, and grammar</strong></td>
<td><strong>Numerous errors in spelling, punctuation, and grammar</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Paper is laid out effectively—uses headings</strong></td>
<td><strong>Paper is laid out effectively, but could make better use of headings and other APA style requirements</strong></td>
<td><strong>Paper is not laid out effectively; fails to use headings and missing other APA style requirements</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Paper is professional in appearance and demonstrates attention to detail; tone of voice is appropriate to the audience, content, and assignment</strong></td>
<td><strong>Paper is professional in appearance and demonstrates attention to detail; but tone of voice is inappropriate to the audience, content, and assignment</strong></td>
<td><strong>Paper is not professional in appearance and demonstrates a lack of attention to detail; tone of voice is inappropriate to the audience, content, and assignment</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Format &amp; References</strong></td>
<td><strong>Title page complete</strong></td>
<td><strong>Title page incomplete or inaccurate</strong></td>
<td><strong>No title page</strong></td>
</tr>
<tr>
<td><strong>References required number of sources</strong></td>
<td><strong>Number of sources referenced is fewer than required</strong></td>
<td><strong>Does not include references to outside sources</strong></td>
<td></td>
</tr>
<tr>
<td><strong>All references cited correctly in APA format including intext citations</strong></td>
<td><strong>Most references cited correctly in APA format including intext citations</strong></td>
<td><strong>References not cited correctly APA format nor are intext citations provided or no References cited</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Total % Earned</strong></td>
<td><strong>90 - 100</strong></td>
<td><strong>75 - 89</strong></td>
<td><strong>0 - 74</strong></td>
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**College and University Policies and Procedures:**

Students must comply with the policies published in the college’s *Graduate Catalog* and the *NSU Student Handbook*, some of which are included or referenced below. The catalog is at [http://cec.nova.edu/about/catalogs.html](http://cec.nova.edu/about/catalogs.html)
The handbook is at [https://www.nova.edu/publications/ustudenthandbook/](https://www.nova.edu/publications/ustudenthandbook/)

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 *Graduate Catalog*.

   Each student is responsible for maintaining academic integrity and intellectual honesty in his or her academic work. It is the policy of the college 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 Words or Ideas*)
   - Not use or consult paper writing services, software coding services, or similar services for the purpose of obtaining assistance in the preparation 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 Words or Ideas* below)

**Crediting Words or Ideas**

When using the exact words from another work, 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 from another work, 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 Words or Ideas*). At all times, students are expected to comply with the college’s accepted citation practice and policy. The college and its faculty are committed to maintaining high standards of academic integrity. Student work will be routinely
submitted to plagiarism detection tools (such as those at www.turnitin.com) for review.

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.

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 NSU’s ADA Coordinator 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. CEC 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. The completion date will not typically 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. When the incomplete contract ends the course professor will assign a grade based upon the work completed. 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 withdrawal deadline (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. 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 college’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.