# IST722 Data Warehouse – Course Syllabus

### Fall 2019

Section: M001 | Class No: 17302 | Credits: 3.0   
Meeting Time: Wednesdays 9:30am – 12:15pm | Room: Whitman 302

## Course Information

### Instructor

Michael Fudge

Professor of Practice

314 Hinds Hall

mafudge@syr.edu

<https://ischool.syr.edu/people/directories/view/mafudge/>

Office Hours: Mon/Wed 1:00pm-2:00pm 314 Hinds Hall

## Prerequisite / Co-requisite: IST659 Data Administration Concepts and Database Management

## Description

### Introduction to concepts of business intelligence (BI) and the practice/techniques in building a BI solution. Focuses are on how to use data warehouses as a BI solution to make better organizational decisions.

### Additional Course Description

This course provides concepts, principles, and tools for designing, implementing, and using Data Warehouses. More specifically, we introduce database constructs such as Operational Data Store (ODS), Data Warehouse, and Data Mart, as well as their components. We study the differences between Ralf Kimball’s and Bill Inmon's approaches, roles and responsibilities in the design and implementation of a Data Warehouse, project management guidelines and techniques, requirements gathering, dimensional modeling, Extract Transform and Load (ETL) architecture, specification and data loading, master and reference data management, integration approaches (ETL, EII, EAI), analytical reporting concepts, data governance and recent trends in the data warehouse domain.

The course will leverage a portfolio of SQL Server tools that include SQL Server DBMS, SQL Server Integration Services (SSIS), SQL Server Reporting Services (SSRS) and SQL Server Analysis Service (SSAS) to provide hands-on experience in implementing a reporting solution through assignments, lab exercises and projects.

### Learning Outcomes

Taking this course will provide the following learning outcomes:

#### 1. Technical Knowledge

You will gain technical knowledge and comprehension about data warehouses. You will develop the ability to apply these technologies to solve information problems at the individual and organizational levels. After completing this course, you will be able to:

* Describe various database constructs - ODS, Data Warehouse, Data Mart
* Describe the components of a data warehouse
* Differentiate between Ralf Kimball’s and Bill Inmon's approaches
* Describe various integration approaches - ETL, EII, EAI
* Describe a Master Data Management (MDM) solution
* Create database objects using popular database management system products
* Design and implement data warehouse and business intelligence components

#### 2. Management of Solution Development

You will gain knowledge and comprehension of the disciplines used in the development of data warehouse solutions. You will develop the ability to apply these disciplines in developing solutions for certain organizational and business problems. After completing this course, you will be able to:

* Define the roles and responsibilities in the design and development of data warehouses
* Differentiate various requirements gathering and dimensional modeling techniques
* Define project management guidelines

#### 3. Management of Information Technology

You will be able to integrate technical and solution development concepts with the principles of data governance, strategic alignment and information analysis. You will be able to apply these concepts in the analysis of complex management case studies and problems. After completing this course, you will be able to:

* Describe the data governance concepts
* List some of the recent trends in Data Warehouse

### Required Textbooks and Supplies

* Rainardi, Vincent. **Building a Data Warehouse with Examples in SQL Server**. Apress.   
  ISBN: 978-1590599310. On 3-Hour reserve from the SU Library.
* W.H. Inmon, Claudia Imhoff, Ryan Sousa. **Corporate Information Factory.** Wiley.   
  ISBN: 0-471-39961-2. Available online for free from the SU Library.
* Ralph Kimball, Margy Ross, Warren Thornthwaite, Joy Mundy, Bob Becker. **The Data Warehouse Lifecycle Toolkit: Practical Techniques for Building Data Warehouse and Business Intelligence Systems.** Wiley. ISBN: 978-0-470-14977-5. Available online for free from the SU Library.
* You will need access to SQL Server and various data warehouse and business intelligence tooling, all of which will be provided for you.

## Academic Expectations

### Requirements

As an enrolled student in this course, it is expected that you will:

1. Come to class prepared. It is expected you will complete the assigned readings and coursework. This will be measured each class session through your **Attendance and Participation.** 
   * Attendance is required and there are no excused absences other than medical illness documented by the university.
   * While in attendance you are expected to participate in class activities and be prepared to answer questions which demonstrate your knowledge of the coursework.
   * In some classes a pop-quiz will measure your study of coursework and passing will count as your participation grade for that week.
2. Complete **Homework Assignments**. These assignments are technical activities which enforce asynchronous concepts through practice. Homework must be completed by the due date. No late work is accepted. Homework is assigned a grade of:
   * High Pass (2 points) the assignment is complete and mostly correct with 1-2 minor errors,
   * Low pass (1 point) the assignment is incomplete or has 3 or more errors, or
   * Fail (0 points) the assignment was not turned in by the due date.
3. Take 3 in class **examinations**. The intention of the exam is to ensure you are keeping pace with the coursework.
   * Exams are timed; you will have 30 minutes to complete the exam.
   * Exams are issued in the beginning of class. Show up on time or you risk having less time.
   * Exams are closed-book.
   * Exams consist of multiple choice and short answer questions.
   * Exam individual effort. Anyone caught cheating on an exam will be have to appear before the office of academic integrity.
   * Please be quiet and courteous to others during the exam period.
4. Complete a **Group Project**, which demonstrates your ability to work in a team to build a data warehouse and business intelligence solution around it. An outline of the group project guidelines will appear in a separate document. Project milestones must be completed in time for the live session in the week they are due.

### Grading:

| **Type of Activity** | **Quantity** | **Points** | **Notes** | **Total** |
| --- | --- | --- | --- | --- |
| 1. Attendance & Participation | 10 | 1 | Required. See above section for details. | 10 |
| 1. Homework Assignments | 8 | 2 | All 8 assignments are required. | 16 |
| 1. Examinations | 2 | 22 | 3 Exams; Lowest score dropped. (2 count) | 44 |
| 1. Group Project | 1 | 30 | Refer to project document for details. | 30 |
| **Total Points** |  |  |  | **100** |

### 

### Grading Scale:

| **Student Achievement** | **Percentage** | **Registrar Grade** |
| --- | --- | --- |
| Mastery | 95 - 100 | A |
|  | 90 - 94 | A - |
| Satisfactory | 85 - 89 | B + |
|  | 80 - 84 | B |
| Low Passing | 75 - 79 | B - |
|  | 70 - 74 | C + |
| Unsatisfactory | 65 - 69 | C |
|  | 60 - 64 | C - |
|  | 0 - 59 | F |

## University Policies

### Academic Integrity Policy

Syracuse University’s academic integrity policy reflects the high value that we, as a university community, place on honesty in academic work. The policy in effect at the School of Information Studies defines our expectations for academic honesty and holds students accountable for the integrity of all work they submit. Students should understand that it is their responsibility to learn about course-specific expectations, as well as about university-wide academic integrity expectations. The pilot policy governs appropriate citation and use of sources, the integrity of work submitted in exams and assignments, and the veracity of signatures on attendance sheets and other verification of participation in class activities. The pilot policy also prohibits students from submitting the same work in more than one class without receiving written authorization in advance from both instructors. Under the pilot policy, students found in violation are subject to grade sanctions determined by the course instructor and non-grade sanctions determined by the School or College where the course is offered. SU students are required to read an online summary of the university’s academic integrity expectations and provide an electronic signature agreeing to abide by them twice a year during pre-term check-in on MySlice. For more information and on the policy, see <http://academicintegrity.syr.edu>.

### Disability-Related Accommodations

Syracuse University values diversity and inclusion; we are committed to a climate of mutual respect and full participation. If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS), [disabilityservices.syr.edu](file:///C:\Users\jlfouts\AppData\Local\Microsoft\Windows\INetCache\Content.Outlook\S4J7YO1F\disabilityservices.syr.edu), located at 804 University Avenue, room 309, or call 315.443.4498 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating disability-related accommodations and will issue “Accommodation Authorization Letters” to students as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible.  Our goal at the iSchool is to create learning environments that are useable, equitable, inclusive and welcoming. If there are aspects of the instruction or design of this course that result in barriers to your inclusion or accurate assessment or achievement, please meet with me to discuss additional strategies beyond official accommodations that may be helpful to your success.

### Religious Observances Notification and Policy

SU’s religious observances policy, found at [supolicies.syr.edu/emp\_ben/religious\_observance.htm](file:///C:\Users\jlfouts\AppData\Local\Microsoft\Windows\INetCache\Content.Outlook\S4J7YO1F\supolicies.syr.edu\emp_ben\religious_observance.htm) , recognizes the diversity of faiths represented in the campus community and protects the rights of students, faculty, and staff to observe religious holy days according to their tradition. Under the policy, students should have an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance provided they notify their instructors no later than the end of the second week of classes through an online notification form in MySlice listed under **Student Services/Enrollment/My Religious Observances/Add a Notification**.

### Student Academic Work Policy

Student work prepared for University courses in any media may be used for educational purposes, if the course syllabus makes clear that such use may occur. You grant permission to have your work used in this manner by registering for, and by continuing to be enrolled in, courses where such use of student work is announced in the course syllabus.

I may use academic work that you complete this semester in subsequent semesters for educational purposes. Before using your work for that purpose, I will either get your written permission or render the work anonymous by removing all your personal identification.

### Course Evaluations

There will be an end of course evaluation for you to complete this term, described below.  This evaluation will be conducted online and is entirely anonymous. You will receive a notification from the Syracuse University Office of Institutional Research & Assessment (OIRA) department in your email account with the evaluation website link and your passcode.

We faculty work hard to do the best possible job when preparing and delivering courses for our students. Please understand that not only does the school use the course evaluations to make decisions about the curriculum in order to improve where necessary, but they also use them to make decisions about faculty members. Please take the time and fill out this evaluation as your feedback and support of this assessment effort is very much appreciated.

## Other Course Policies

* All work is due on the dates provided. No late work is accepted. The reasoning is the grading is participation / effort-based and most of the content time-sensitive.
* Final grades will not be rounded up. 94/100 is an A-, please don’t ask.
* I take academic integrity seriously, and so should you. Cheating on examinations will result is an F in the course.

### Office Hours

You are welcome to stop by during office hours without an appointment. Should you need to make an appointment to see me outside of office hours, you must request via email and include the following:

* State your reason for the appointment.
* Include 3 times in which you can meet.
* Make sure 2 times are on different days.

I will respond to you within 24 hours.

### Group Work

The only group work permitted in this course is the Group Project. All other gradable work (Homework, Exams, Etc.) in this course should be considered individual effort. It is assumed that each of you know the difference between simply discussing work with your classmates and working collaboratively. When in doubt please review the class honor code. “I didn’t know” is not an excuse.

## Course Calendar

### Course Schedule

| Week | Date | Topic Covered in Class | What is Due? |
| --- | --- | --- | --- |
| 1 | 8/28 | A - Introduction to Data Warehousing |  |
| 2 | 9/4 | B - Data Warehouse Architectures | Assignment A |
| 3 | 9/11 | C - Building the Data Warehouse | Assignment B |
| 4 | 9/18 | D - Dimensional Modeling | Assignment C |
| 5 | 9/25 | Exam 1, Project Milestone 1 Presentations | Exam 1, Milestone 1 |
| 6 | 10/2 | E - Dimensional Model Development | Assignment D |
| 7 | 10/9 | F - Introduction to ETL | Assignment E |
| 8 | 10/16 | Exam 2, Project Milestone 2 Presentations | Exam 2, Milestone 2 |
| 9 | 10/23 | G – ETL Development | Assignment F |
| 10 | 10/30 | H – Managing the Data Warehouse | Assignment G |
| 11 | 11/6 | I – Business Intelligence |  |
| 12 | 11/13 | J – Big Data and the Data Warehouse | Assignment I |
| 13 | 11/20 | Exam 3, Project Milestone 3 Presentations | Exam 3, Milestone 3 |
| 14 | 11/27 | No Classes – Thanksgiving Break |  |
| 15 | 12/4 | Final Project Presentations | Project Deliverables |

PLEASE NOTE: Assigned textbook readings are posted in blackboard.