



Course Syllabus

Course Information

Course Number:	ALY6030
Course Title:	Data Warehousing and SQL
CRN:	70526
Term and Year:	Fall 2021 CPS Quarter (6 weeks)
Start / End Dates	09/20/2021 - 10/30/2021
Credit Hors	3.00
Course Format:	Hybrid
Location	Ryder Hall, Room 433
Meeting Days/Time	Tuesday, 5:50pm – 8:30pm

Instructor Information

Full Name:	Valeriy Shevchenko
NEU Email Address:	v.shevchenko@northeastern.edu
Office Hours	Virtual, will reply within 24 hours

NuFLEX Requirements

Should this course fall under the Hybrid NuFlex policy, please refer to any and all supplemental materials pertaining to class attendance, participation, and other aspects impacting student and/or instructor engagement. For additional information, please refer to your advisor.

Technical Requirements

Courses are available on Northeastern University's **Canvas** at the following link: <http://canvas.northeastern.edu>. Canvas Technical support and resources including 24/7 phone (1-833-450-3937), and chat can be found on the help icon in Canvas. Be sure to click the Help link in Canvas for technical requirements and support resources. Northeastern Technical Support can be reached at 617-373-4357 (xHELP) or help@northeastern.edu.

Each student is responsible for his or her access to the internet for purposes of this course and for research. Internet access is a required component of this course and will not be accepted as an excuse for missed work. If you know that you will be traveling, then make sure you plan accordingly.

Note regarding e-mail/voicemail: If you e-mail me, please include both class number and CRN number into **email subject**. Please allow up to 24 hours for an email reply. All class correspondence will go to your assigned NEU email account. Any emails being sent to the whole class will go to your NEU email. It is mandatory you use your NEU/Husky email account when contacting your instructor. If you leave me a voicemail, please remember to include your name, class title, CRN Number and phone number.

Course Prerequisites

Successful completion of ITC6000 Database Management Systems is required. Students must be enrolled as CPS-Graduate.

Course Description

Focuses on the purpose and design of data warehouses, and the mining and management of patterns in large databases. Offers students the opportunity to learn how organizations construct data warehouses from operational databases, about different data warehouse architectures, how to build a data warehouse, and how to structure databases for efficient data mining. Explains how data warehouses are contributing to decision making, what activities may follow the observations, as well as potential issues that analysts may encounter when dealing with

data warehouses. Discusses relational databases and Structured Query Language (SQL) for the fundamentals in data modeling, database management, and SQL queries. Introduces other modern database systems such as NoSQL (non-SQL) and column-based databases.

Course Materials

Reading

- The Data Warehouse Toolkit: The Definitive Guide to Dimensional Modeling, 3rd Edition, 2013, by Ralph Kimball and Margy Ross, ISBN-13: 978-1118530801. **Required.**
- MySQL Explained: Your Step by Step Guide to Database Design, by Andrew Comeau. ISBN-13: 978-1519424372. **Required.**
- Other handouts and short readings, to be distributed by the instructor. **Required.**
- The Kimball Group Reader: Relentlessly Practical Tools for Data Warehousing and Business Intelligence Remastered Collection, 2nd Edition, 2016, by Ralph Kimball, Margy Ross, Bob

Software & Tools:

- MySQL server. **Required.**
<https://dev.mysql.com/downloads/installer/>
- MySQL workbench. **Required.**
<https://www.mysql.com/products/workbench/>
- Microsoft SQL Server Express Edition. **Required. (You might need to install Parallels if using MAC or use Microsoft Azure VM provided by NEU)**
<https://www.microsoft.com/en-us/sql-server/sql-server-downloads>
- Microsoft SQL Server Management Studio. **Required. (You might need to install Parallels if using MAC or use Microsoft Azure VM provided by NEU)**
<https://docs.microsoft.com/en-us/sql/ssms/download-sql-server-management-studio-ssms?view=sql-server-ver15>

The instructor will also go over it in class.

Program Student Learning Outcomes (PLOs)

Specialized Knowledge	Broad and Integrative Knowledge	Applied and Collaborative Learning	Civic and Global Learning	Experiential Learning
PLO1	PLO2	PLO3	PLO4	PLO5
Integrate the major theories, tools, and approaches in data warehousing to identify and successfully communicate data-driven insights for informed decision making.	Articulate and effectively defend the significance and implications of the work in data warehousing in terms of challenges and trends.	Apply the principles, tools and methods of Data Warehousing to a comprehensive real world problem or business related for tactical and/or strategic decision making; transform and present data and recommendations for successful implementation of the project.	Propose an effective path to resolution of a data related problems that may be complicated by the competitive environment, opposing interests, divergent or uncertain data and information.	Apply the principles, tools and methods of analytics to a project within a sponsoring organization to successfully assist with the extraction, development, delivery, and/or translation /implementation of data for tactical and/or strategic decision making in organizations.

In this course students are developing skills that relate to Program PLOs 1-3

SAIL Baseline Mapping

Enter 5 for Central, 4 for Significant, 3 for Moderate, 2 for Minimal, 1 for Potential, or 0 for None					Enter 1 for Passive Engagement, 2 for Active Engagement, or 3 for Generative Engagement
Social Consciousness & Commitment	Global Mindset	Intellectual Agility	Personal & Professional Effectiveness	Well-Being	Level of Engagement
2	2	5	4	1	3

Course Learning Outcomes (CLOs)

CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
Identify and manage patterns in large databases.	Evaluate how organizations construct data warehouses and data marts from operational databases.	Analyze the key components of a relational database design including primary and foreign key structures.	Develop a plan to build a data warehouse taking into consideration both structured and unstructured data.	Discusses relational databases and Structured Query Language (SQL) for the fundamentals in data modeling, database management, and SQL queries.	Describe the differences and use cases for non-relational databases and relational databases.	Design a data schema for a relational database given a set of business rules.	Interpret the information from data warehouses to contributing to decision making. Identify potential issues that arise when dealing with data warehouse.

Expectations

- One (1) academic credit requires 50 minutes a week of classroom or faculty instruction and about two hours of out of class student work for a 15-week course; 100 minutes a week of classroom or direct faculty instruction and about 3.5 hours of out of class student work for a 7.5-week course.
- For a three-credit course, students should expect 2.5 hours a week of classroom or faculty instruction and a minimum of 5 hours of out of class student work for a 15-week course; 5 hours of classroom or direct faculty instruction and a minimum of 10 hours of out of class student work for a 7.5-week course.

Attendance Policy

Student will attend six classes online or on-site at dates and times as specified in Course Information section. Attendance will be recorded and stored using CPS Attendance Tracking Tool.

Policy on late work

Any delays in submission without prior notification will negatively affect your score. However, not all prior notifications will be accepted by the instructor, therefore, avoid requesting extra time unless absolutely necessary. Any submissions for already graded assignment will not be considered unless prior arrangements had been discussed and agreed upon.

Course Methodology

Each week, you will be expected to:

1. Review the week's learning objectives.
2. Complete all assigned readings.
3. Complete all lecture materials for the week.
4. Participate in the Discussion Board.
5. Complete and submit all assignments and tests by the due dates.

Participation/Discussion Board

Discussion board minimum requirements are:

- At least 1 (one) meaningful primary response is due by 5:00 PM EST on or before the day of the next class.
- At least 2 (two) meaningful secondary responses are due by 5:00 PM EST on or before the day of the next class.

To facilitate interaction, students are expected to review the online postings on a regular basis even after they have posted their own minimum required postings. Please treat your classmates and the instructors with the utmost respect. Inappropriate posts will be removed immediately. The instructor reserves the right to penalize students for repeated violations of the participation policy (and/or Academic Integrity Policy) within a course. In the discussion board and in class, high quality contributions advance the class discussions and do not simply summarize the material that was assigned. Quality contributions take into account not only the instructor's questions but also your classmates' contributions. Please be mindful that the Discussion Board is a space for academic exchanges. As a result, students are accountable for using proper and exacting punctuation, spelling, and grammar. In addition, you may be required to reference all outside sources in correct citation format. It is crucial that all participants maintain a high regard for proper decorum in the Discussion Board.

The following are the expectations for successful grades for the discussion board assignments:

- Participation in the discussion board: each week students must post **at least one primary response** (new thread to the discussion board) and **two secondary responses** (responses to other students' posts).
- The primary response should consist of a minimum of 250 words, and replies should contain at least 50 words.
- Last minute postings that are empty of substance and essence will result in significant point deductions.
- When responding to the Discussion forum, learners should support their comments with logical reasoning and with the techniques of data analysis. Simply stating that agree or disagree without further describing why will not be accepted as a valid discussion.
- Copying and pasting from any source into the discussion board is unacceptable.
- Attachments in discussion board only allowed as a references and cannot substitute primary or secondary response content

Assignment Submission and Communication

In the Assignments folder, click on the View/Complete Assignment link to view and each assignment. Attach your completed assignments here and click Submit to turn them in to me. Once your assignment has been graded, you will be able to view the grade and feedback I have provided by clicking on My Grades in the Tools module from the Northeastern University Online Campus tab. You are also encouraged to post content oriented communication in the Discussion Board instead of in e-mail so that all students can benefit from each other's learning. Make sure to submit both **pdf** or **word** file with the paperwork and your SQL script(s) in text format (.sql). Each SQL script file must be well commented and explained from the data standpoint. Each line of SQL script should have meaningful comments or explanation. Your PDF or WORD must contain at least the following:

- Title Page with:
 - Your name (as it is registered with this class).
 - Class and CRN numbers.
 - Class name.
 - Assignment Name
- Assignment summary section explaining what this assignment is about, goals, methods.
- Any results or outputs provided by SQL script (screen shots, charts, graphs, etc.).
- Each performed step must be documented in the submitted paperwork.
- Each and every screen shot, chart, graph, etc., must be commented and explained.
- Explanation of input data or datasets from the data standpoint.
- Explanations for each output or results from the data standpoint, not the standard definition of what function returns.
- Conclusions and explanation of the goals and findings from the data standpoint.

Evaluation Standards

The course grade will be determined on the following basis:

Assignment	Due Date	Total	Total %
5 Weekly Quizzes (20 points each)	WEEKLY: <ul style="list-style-type: none">• Available at the beginning of each class @ 5:50PM EST. Due before the end of each class @ 8:30PM EST	100	10%
5 Weekly Discussions (40 points each)	WEEKLY: <ul style="list-style-type: none">• One Primary posting for each discussion thread due on or before the beginning of the next class on @ 05:00 PM EST• Two Secondary responses for each discussion due on or before the beginning of the next class @ 05:00 PM EST	200	20%
5 Assignments (100 points each)	WEEKLY: <ul style="list-style-type: none">• Due on or before the beginning of the next class @ 05:00 PM EST	500	50%
Final Test (200 points)	<ul style="list-style-type: none">• Final Test will be taken during the Week 6 class and due before the end of the last class @ 8:30 PM EST (200 points)	200	20%
Total		1000	100%

Grading

The final grade reported will be broken down by the following scale:

95-100%	A	87-89.9%	B+	77-79.9%:	C+	69.9% or below	F
		84-86.9%	B	74-76.9%	C		
90-94.9%	A-	80-83.9%	B-	70-73.9%	C-		

Course Schedule

Week	Date	Topic	Readings and Assignments	COs/SLOs
1	09/21 – 09/27	<ul style="list-style-type: none"> • The relational model • MySQL/Workbench • Basic SQL queries 	<ul style="list-style-type: none"> • Install MySQL Workbench • Read Comeau, Chapters 1-3, 5, 7 • Module 1 Quiz (due before the end of the class @ 8:30 PM EST) • Module 1 Discussion (due before 5 PM EST next class) • Module 1 Assignment (due before 5 PM EST next class) 	PLO1, CLO1
2	09/28 – 10/04	<ul style="list-style-type: none"> • SQL Joins and Normalization • Normalization/normal forms 	<ul style="list-style-type: none"> • Read Comeau, Chapters 4, 6, 8 • Module 2 Quiz (due before the end of the class @ 8:30 PM EST) • Module 2 Discussion (due before 5 PM EST next class) • Module 2 Assignment (due before 5 PM EST next class) 	PLO2, CLO2
3	10/05 – 10/11	<ul style="list-style-type: none"> • Data Warehousing • Dimensional Modeling • SQL Case Statements 	<ul style="list-style-type: none"> • Read Kimball, Chapter 1 • Module 3 Quiz (due before the end of the class @ 8:30PM EST) • Module 3 Discussion (due before 5 PM EST next class) • Module 3 Assignment (due before 5 PM EST next class) 	PLO3, CLO3
4	10/12 – 10/18	<ul style="list-style-type: none"> • Basic Facts and Dimension Tables • Conformed Dimensions • SQL Window Functions 	<ul style="list-style-type: none"> • Read Kimball, Chapter 2 • Read Kimball Group, 2013. Dimensional Modeling Techniques. • Module 4 Quiz (due before the end of the class @ 8:30 PM EST) • Module 4 Discussion (due before 5 PM EST next class) • Module 4 Assignment (due before 5 PM next class) 	PLO3, CLO4
5	10/19 – 10/25	<ul style="list-style-type: none"> • Referential Integrity • SQL Window Functions part 2 • Slowly changing dimensions 	<ul style="list-style-type: none"> • Read Kimball, Chapters 3, 15 • Read Kimball Group, Chapters 10.2 & 10.3 • Module 5 Quiz (due before the end of the class @ 8: 30 PM EST) • Module 5 Discussion (due before 5 PM EST next class) • Module 5 Assignment (due before 5 PM EST next class) 	PLO2, CLO5
6	10/26 – 10/30	<ul style="list-style-type: none"> • SQL deduping techniques • OLAP vs. OLTP • Big Data applications • Final Test 	Final Test due on the day of last class @ 08:30 PM EST, total worth 200 points)	PLO1, PLO2 PLO3, CLO6

End-of-Course Evaluation Surveys

Your feedback regarding your educational experience in this class is very important to the College of Professional Studies. Your comments will make a difference in the future planning and presentation of our curriculum.

At the end of this class, please take the time to complete the evaluation survey at the NEU Evaluation Kit website: <https://new.evaluationkit.com>. Your survey responses are **completely anonymous and confidential**. Surveys will be open for the last two weeks of the class. An email will be sent to your HuskyMail account notifying you when surveys are available.

If you do not pass the systems check or have any questions or concerns, you can contact Examity's® technical support team 24/7 via email at support@examity.com or phone at (855) 392-6489. Please tell your instructor immediately if your computer/equipment does not meet the standard to use online proctoring.

Academic Integrity

A commitment to the principles of academic integrity is essential to the mission of Northeastern University. The promotion of independent and original scholarship ensures that students derive the most from their educational experience and their pursuit of knowledge. Academic dishonesty violates the most fundamental values of an intellectual community and undermines the achievements of the entire University.

As members of the academic community, students must become familiar with their rights and responsibilities. In each course, they are responsible for knowing the requirements and restrictions regarding research and writing, examinations of whatever kind, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Students are responsible for learning the conventions of documentation and acknowledgment of sources in their fields. Northeastern University expects students to complete all examinations, tests, papers, creative projects, and assignments of any kind according to the highest ethical standards, as set forth either explicitly or implicitly in this Code or by the direction of instructors.

Go to <http://www.northeastern.edu/osccr/academic-integrity-policy/> to access the full academic integrity policy.

CPS expects independent and original work. Dishonesty and/or carelessness violates fundamental values of an intellectual and professional community and will be reported to the Office of Student Conduct and Conflict Resolution (OSCCR) as a violation of the Academic Integrity Policy. To safeguard the integrity of assignments and programs, your course may use systems such as TurnItIn, which checks written work, and Examity, an online exam proctoring system. Work that contains academic integrity violations (AIV) will be graded on a case by case basis. Work displaying AIV may earn a failing grade, a zero, or even result in the instructor assigning the student a failing grade for the class. Students may not withdraw from a class to avoid the grade penalty for serious academic integrity violations.

For additional information or for answers to frequently asked questions, please visit:

<https://cps.northeastern.edu/academic-resources/academic-integrity>

You may also email CPS-AcademicIntegrity@northeastern.edu.

Student Accommodations

The College of Professional Studies is committed to providing equitable access to learning opportunities to students with documented disabilities (e.g. mental health, attentional, learning, chronic health, sensory, or physical). To ensure access to this class, and program, please contact The Disability Resource Center (<http://www.northeastern.edu/drc/> to engage in a confidential conversation about the process for requesting reasonable accommodations in the classroom and clinical or lab settings. Accommodations are not provided retroactively so students are encouraged to register with the Disability Resource Center (DRC) as soon as they

begin their program. The College of Professional Studies encourages students to access all resources available through the DRC for consistent support.

Library Services

The Northeastern University Library is at the hub of campus intellectual life. Resources include over 900,000 print volumes, 206,500 e-books, and 70,225 electronic journals.

For more information, visit <http://library.northeastern.edu/>.

Wyzant Tutoring Services

Northeastern University's College of Professional Studies is covering the cost of 4 hours of tutoring from Wyzant to help ensure your success in challenging courses. Tutors on Wyzant have helped thousands of students in 300+ subjects ranging from College Algebra to Academic Writing, Statistical Analysis to Microbiology. [Click here](#) to access your free tutoring through Northeastern University's Wyzant account.

Access your free tutoring using your Northeastern login credentials. Indicate your program, time zone, the course you'd like support in, and the specific topics or materials you'd like help with.

You'll receive an activation email from Wyzant for Higher Ed. (If you don't see it, check your spam or junk folders.) From the email, click on the activation button.

Potential tutors will begin reaching out to you. Their messages will be sent to your Northeastern email inbox and will be accessible via your Wyzant account dashboard.

Respond back to the tutors you believe might be a good fit to schedule an online session when it's convenient for you — even late at night!

24/7 Canvas Technical Help

For immediate technical support for Canvas, call 1-833-450-3937. You can chat and report an issue to Canvas technical support right from within Canvas through the Help icon located in the Canvas global navigation.

myNortheastern, e-mail, and basic technical support

Visit the [Information Technology Services \(ITS\) Support Portal](#)

Email: help@northeastern.edu

ITS Customer Service Desk: 617-373-4357 (help)

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Catalog

The College of Professional Studies Undergraduate Catalog is a reference/resource with information about curricula, resources, and academic and student policies.

For more information, visit <http://www.cps.neu.edu/student-resources/>.

Diversity and Inclusion

Northeastern University and the Office of Institutional Diversity and Inclusion (OIDI) is committed to equal opportunity, affirmative action, diversity and social justice while building a climate of inclusion on and beyond campus. In the classroom, member of the University community work to cultivate an inclusive environment that denounces discrimination through innovation, collaboration and an awareness of global perspectives on social justice.

Please visit <http://www.northeastern.edu/oidi/> for complete information on Diversity and Inclusion

Title IX

Title IX of the Education Amendments of 1972 protects individuals from sex or gender-based discrimination, including discrimination based on gender-identity, in educational programs and activities that receive federal financial assistance.

Northeastern's [Title IX Policy](#) prohibits sex and gender-based discrimination, including sexual harassment, sexual assault, sexual exploitation, relationship or domestic violence, and stalking. The Title IX Policy refers to sex and gender-based discrimination as "Prohibited Offenses." The Title IX Policy applies to the entire Northeastern community, including students, faculty and staff of all gender identities.

Allegations of Prohibited Offenses can be reported to the Title IX Coordinator within **The Office for University Equity and Compliance** at: titleix@northeastern.edu and/or through **the Northeastern University Police Department (NUPD)** by phone: for an Emergency 617.373.3333; for Non-Emergency 617.373.2121. Reporting to NUPD does **NOT** commit the victim/affected party to future legal action.

Faculty members are considered "responsible employees" at Northeastern University, meaning they are required to report all reports of and information about alleged Prohibited Offenses to the Office for University Equity and Compliance.

If you or someone you know has experienced a Prohibited Offense, **confidential** support and guidance can be found through **ViSION Resource Center (VRC)** staff (<http://www.northeastern.edu/vision/visionresourcecenter/>), **University Health and Counseling Services (UHCS)** staff (<http://www.northeastern.edu/uhrs/>) and the **Center for Spiritual Dialogue and Service (CSDS) clergy members** (<http://www.northeastern.edu/spirituallife/>). Employees within the VRC, UHCS, and CSDS are not required to report allegations of Prohibited Offenses to the Office for University Equity and Compliance.

In case of an emergency, please call 911 OR NUPD'S Emergency line: 617-373-3333.

Please [visit www.northeastern.edu/titleix](http://www.northeastern.edu/titleix) for a complete list of reporting options and **resources, both on- and off-campus.**

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The instructor reserves the right to amend this syllabus, both online and the document itself, during the term and will notify students of the change(s). The revised syllabus is the official record of class policies and schedule of due dates.