TED ROGERS SCHOOL
Information Technology Management

Ryerson University
The Chang School of Continuing Education

RYERSON UNIVERSITY

Ted Rogers School of Information Technology Management and G. Raymond Chang School of Continuing Education

COURSE OF STUDY
2017-2018

(C)ITM 430 – System Design and Implementation

1.0 PREREQUISITE

The prerequisite for this course are (ITM 200 and ITM 305) or Direct Entry or in IT015 or IT016. Students who do not have the prerequisites will be dropped from the course

2.0 INSTRUCTOR INFORMATION

- Name:
- Office Phone Number:
- E-mail address:
- Faculty/course web site(s): https://my.ryerson.ca
- Office Location & Consultation hours:
    - Your instructor is available for personal consultation during scheduled consultation hours which are posted on their office door or on the course shell in D2L Brightspace. However, you are advised to make an appointment by e-mail or by telephone before coming to ensure that the professor is not unavoidably absent.
- E-mail Usage & Limits:

Students are expected to monitor and retrieve messages and information issued to them by the University via Ryerson online systems on a frequent and consistent basis. ***Ryerson requires that any official or formal electronic communications from students be sent from their official Ryerson E-mail account.*** As such emails from other addresses may not be responded to.

3.0 CALENDAR COURSE DESCRIPTION

This course builds on ITM 305 and is intended to provide students with skills and competencies necessary for technical design, implementation and testing of business applications in O-O technologies. This course is based on the Object Oriented Model Driven Architecture method of system development. The UML Modelling Language will be used along with O-O software tools such as Enterprise Architecture and MDG Link to ensure platform independent designs. This course

includes a design and development project in which students will implement and test a business application in O-O technologies.

4.0 COURSE OVERVIEW

This course examines the activities that take place in the Inception, Elaboration and Construction of object-oriented software systems. It emphasizes the principles of iterative development and makes use of both UML and Patterns for the analysis, design and actual coding of these systems. To illustrate the concepts covered, it uses long-running case studies (in both the lectures and in the students' projects)

5.0 COURSE OBJECTIVES

The objectives of this course are as follows:
• Master object-oriented analysis and design through a hands-on implementation of the course concepts in case studies.
• Fully understand the iterative process for moving step-by-step from requirements to code.
• Learn UML tools, and how to apply them skillfully.
• Learn to apply basic design patterns for assigning responsibilities to classes
• Apply the course concepts to long-running case studies that illustrate the entire OOA/D process.
• Learn how to map object design artifacts to code.

6.0 EVALUATION

The grade for this course is composed of the mark received for each of the following components:
Note: Students must achieve a course grade of at least 50% of term works (quizzes and project) and exams (midterm and final) to pass this course.

Evaluation Component	**Percentage of the Final Grade**
Quizzes (5)	5 x 2% = 10%
Project	2 x 10% = 20%
Midterm	25%
Final	45%
Total	**100%**

NOTE: Students must achieve a course grade of at least 50% to pass this course.

Citation Format for Essays and Term Papers

All essay assignments, term paper and other written works must adhere with APA citation format. Technical errors (spelling, punctuation, proofing, grammar, format, and citations) and/or inappropriate levels of language or composition will result in marks being deducted. You are encouraged to obtain assistance from the Writing Centre (www.ryerson.ca/writingcentre) for help with your written communications as needed.

You can find APA guidelines and academic referencing from the following online resources:

a) Ryerson Writing Support Web site:
http://www.ryerson.ca/content/dam/studentlearningsupport/resources/citation-conventions/APA%20Basic%20Style%20Guide.pdf

b) Ryerson Library for APA style guide: https://library.ryerson.ca/guides/style/

7.0 POSTING OF GRADES

- All grades, on assignments or tests must be posted or made available to students through the return of their work. Grades on final exams must be posted. However, as there may be other consideration in the determination of final grades, students will receive their official final grade in the course only from the Registrar. Final official course grades may not be posted or disclosed anywhere by an instructor.
- Posting of grades on the Course Management System (D2L Brightspace) is preferred. If grades are posted in hard copy they must be posted numerically sorted by student identification number after at least the **first four digits** have been removed. Instructors must inform students in all course management documentation of the method to be used in the posting of grades. Students who wish not to have their grades posted must inform the instructor in writing.
- Some graded work will be returned to students prior to the last date to drop a course without academic penalty.

8.0 TOPICS – SEQUENCE & SCHEDULE

S#	Topic	Learning Outcomes	Readings	Activities & Due Dates
1	*Course outline, objectives, and evaluation schema *Review of ITM305: Requirements Specification, Use Case & Activity Diagrams, Actors, Scenarios, English Description	Requirement Analysis: A Review	Chapters 1-8	Review of ITM305
2	Requirements Analysis: *Business modeling *Analysis Class diagram (or domain model) *Operation contracts	Req. Ana.: FRs, NFRs, Use cases, Scenarios, Act diag. Domain model	Chapters 9, 10, 11	Project-Iteration1 (starts) quiz#1
3	Design: Interaction Modeling * UML Interaction diagrams (sequence and communication) * From Requirement analysis to Design	System Design: based on Req. Ana. Interaction diagram	Chapter 15	Project-Iteration1 (cont.)
4	Design: Static Object Modeling * UML Class diagrams	System Design: Class diagrams, Responsibilities	Chapter 16	Project-Iteration1 (cont.) quiz#2
5	Design: Use Case Realization * Patterns and general principles for assigning responsibilities to objects	Applying Design Patterns (start)	Chapter 17	Project-Iteration1 (cont.)
6	Design: Use Case Realization (continued) * Examples and design class diagrams	System Design: Class diagrams, Database, Interface	Chapters 18, 19	Project-Iteration1 (due) quiz#3
7	Midterm Exam			
8	Design: Pattern Solutions (continued) *More on design patterns, Examples of applying patterns	Applying Design Patterns (Improving Design)	+	Project-Iteration1 (fixes) Iteration2 (starts)
9	Sub-System Design and Architecture * System organization / Package diagrams	Modeling System Architecture	Chapter 13	Project-Iteration2 (cont.) quiz#4
10	System Implementation * Mapping designs to code * Implementation	Coding based on System Design	Chapter 20	Project-Iteration2 (cont.)
11	Testing *Unit code and use case testing	Testing plans & Unit Test cases, Traceability	Chapter 21	Project-Iteration2 (cont.) quiz#5
12	Course Overview			Project-Iteration2 (due)
13	Final Exam			

9.0 TEACHING METHODS

The course will be delivered in the form of lectures and labs.

10.0 TEXTS & OTHER READING MATERIALS

Title: Applying UML and Patterns: An Introduction to a Object-oriented Analysis and Design (3rd Edition)
Author: Craig Larman
Publisher: Prentice Hall
ISBN: 978-0131489066

+ Suggested/Recommended Textbook
Title: Object-Oriented Software Engineering Using UML, Patterns, and Java (3rd Edition 2011)
Author: Bernd Bruegge, Allen H. Dutoit
Publisher: Pearson
ISBN: 978-0136061250, 0136061257

11.0 VARIATIONS WITHIN A COURSE

All sections of a course (Day and CE sections) will follow the same course outline and will use the same course delivery methods, methods of evaluation, and grading schemes. Any deviations will be posted on D2L Brightspace once approved by the course coordinator.

12.0 OTHER COURSE, DEPARTMENTAL, AND UNIVERSITY POLICIES

- For more information regarding course management and departmental policies, please consult the **'Appendix of the Course of Study'** which is posted on the Ted Rogers School of Information Technology Management website, http://www.ryerson.ca/content/dam/itm/documents/cos/Appendix.pdf. This appendix covers the following topics:
  - **12..1** Attendance & Class Participation
  - **12..2** Email Usage
  - **12..3** Request for Academic Consideration
    - **12..3.1** Ryerson Health Certificate
    - **12..3.2** Academic Accommodation for Students with Disabilities
    - **12..3.3** Religious, Aboriginal or Spiritual Observance
    - **12..3.4** Re-grading and Recalculation
  - **12..4** Examinations & Tests
    - **12..4.1** Period of Prohibition from Testing
    - **12..4.2** Make-Up of Mid-Term Tests, Assignments and Other Assessments During the Semester
    - **12..4.3** Make –Up of Final Exams
    - **12..4.4** Missing a Make-Up
  - **12..5** Late Assignments
  - **12..6** Standard of Written Work
  - **12..7** Academic Grading Policy
  - **12..8** Academic Integrity
    - **12..8.1** Turnitin.com
  - **12..9** Student Rights