

### APPLIED COMPUTER SCIENCE

Course Number: ACS-3913/3-001

**Course Name:** Software Design and Architecture

## **Instructor Information**

Instructor: Ron McFadyen Office: 3D21 Class Meeting Time: MW 11:30-12:45 Room No: 3D04

Office Hours: W 10:00-11:00

Web page: <a href="mailto:courses.acs.uwinnipeg.ca/3913">courses.acs.uwinnipeg.ca/3913</a>
E-mail: <a href="mailto:ron.mcfadyen@acs.uwinnipeg.ca">ron.mcfadyen@acs.uwinnipeg.ca</a>

#### **Important Dates**

First class: Wed Jan 4, 2017

Midterm Tests: Mon Jan 30 & Mon Feb 13, 2017 Final Exam: Tues Apr 11, 2017, 1:30 p.m.

Reading Week: Feb 19-25, 2017 (no classes)

Final Withdrawal Date w/o academic penalty: Wed Mar 1, 2017

(A minimum of 20% of the work on which the final grade is based will be evaluated and

available to the student before the voluntary withdrawal date)

#### **Additional Course Related Information**

- 1. When it is necessary to cancel a class due to exceptional circumstances, instructors will make every effort to inform you via uwinnipeg email, as well as the departmental assistant and Chair/Dean so that class cancellation forms can be posted outside classrooms.
- 2. Your uwinnipeg email address will normally be used for course related correspondence.
- 3. Please note that withdrawing before the VW date does not result in a fee refund.
- 4. Class make-up days are scheduled at the end of term for courses that conflict with holidays.

# **Course Objectives/Learning Outcomes**

The primary objective is to provide the student with additional OO software design techniques suitable for professional practice and for the Applied Computer Science Project Course. In particular the course covers several software design patterns using UML and Java. For each of the patterns the student learns when and how to apply the pattern, and understands its structural and behavioural aspects.

The student's knowledge of Java and programming capabilities are advanced.

The student's knowledge of UML class, object, statechart, and sequence diagrams is

advanced.

The student is prepared to further their study of design patterns in software design, human computer interaction, database, etc.

#### **Evaluation Criteria**

Assignments (20 %)

4 assignments.

Late assignments are accepted with a penalty of 25% per day late (up to 2 days late).

Assignments are equally weighted.

Some assignments require UML and/or extending existing Java code.

All questions must be answered using an appropriate software tool.

Tests (1st test 10%, 2nd test 20 %)

Unless a medical certificate is provided, no accommodation is made for missed tests or assignments.

Final Exam (50 %)

## **Final Letter Grade Assignment**

Historically, numerical percentages have been converted to letter grades using the following scale. However, instructors can deviate from these values based on pedagogical nuances of a particular class, and final grades are subject to approval by the Department Review Committee.

A+	90+ - 100%	В	70 - 74%	F	below 50%
A	85 - 90%	C+	65 - 69%		
A-	80 - 84%	C	60 - 64%		
B+	75 - 79%	D	50 - 59%		

# **Test/Exam Requirements**

Photo ID is not required

No computer, calculator or any other electronic device (e.g. cell phone) is permitted.

## **Accessibility Services**

Students with documented disabilities, temporary or chronic medical conditions, requiring academic accommodations for tests/exams (e.g., private space) or during lectures/laboratories (e.g., note-takers) are encouraged to contact Accessibility Services (AS) at 786-9771 or <a href="mailto:accessibilityservices@uwinnipeg.ca">accessibilityservices@uwinnipeg.ca</a> to discuss appropriate options. All information about a student's disability or medical condition remains confidential <a href="http://www.uwinnipeg.ca/accessibility">http://www.uwinnipeg.ca/accessibility</a>

# Respectful Working and Learning Environment

All students, faculty and staff have the right to participate, learn, and work in an environment that is free of harassment and discrimination. The UW Respectful Working and Learning Environment Policy may be found online at www.uwinnipeg.ca/respect

We ask that you please be respectful of the needs of classmates and instructors/professors by avoiding the use of unnecessary scented products while attending lectures. Exposure to

scented products can trigger serious health reactions in persons with asthma, allergies, migraines or chemical sensitivities. Please consider using unscented necessary products and avoiding unnecessary products that are scented (e.g. perfume).

### **Required Text Book(s)/Reading List**

Head First Design Patterns; Freeman, Robson, Bates, Sierra; O'Reilly; 0-596-00712-4

**Prerequisite Information** (This information can be found in the UW General calendar) A grade of at least C in ACS-2913/3 (or the previous ACS-2911/3 and ACS-2912/3) and ACS-2947/3.

### Misuse of Computer Facilities, Plagiarism, and Cheating

Academic dishonesty is a very serious offense and will be dealt in accordance with the University's policies. Be sure that you have read and understood Regulations & Policies #8, starting on page 27, in the 2016-2017 UW Course Calendar or

http://uwinnipeg.ca/academics/calendar/docs/regulationsandpolicies.pdf

Students facing a charge of academic or non-academic misconduct may choose to contact the University of Winnipeg Students' Association (UWSA) where a student advocate will be available to answer any questions about the process, help with building a case, and ensuring students have access to support. For more information or to schedule an appointment, visit our website at www.theuwsa.ca/academic-advocacy or call 204-786-9780.

## **Topics to be covered (tentative)**

We will cover design patterns as time permits. In conjunction with these patterns, we cover aspects of Java and UML that are pertinent. For code from Head First Design Patterns, see <a href="http://www.headfirstlabs.com/books/hfdp/">http://www.headfirstlabs.com/books/hfdp/</a>

Patterns (order may vary):

Strategy Singleton
Observer Iterator
Decorator State
Facade Composite
Adapter Template

Command Compound patterns
Factory Others as time permits