Vanier College
Faculty of Science and Technology
Computer Science Department

Course Number	420-141-VA	**Teacher**	Mohand Chebbine
Course Title	Game Programming 1	**E-mail**	through MIO
Section	00001 & 00002	**Office Hours**	by appointment
Ponderation	Theory: 2, Lab: 3, Homework: 2	**Semester**	Fall 2020

COURSE DESCRIPTION

This is an introductory project-based course where students will produce an original video game. This course introduces students to *Greenfoot* software, a basic game engine, that will be used to build a variety of interactive games. The course is designed to learn programming and to collaborate in team projects as well as application of mathematical concepts. Students will be encouraged to think creatively, reason systematically and work collaboratively in order to implement an original game to be presented to their peers at the end of the semester.

In addition to computer programming concepts, students will learn different aspects of video game development including basic image editing, animation, working with sounds, visual effects, etc. This course does not assume any previous programming knowledge.

LEARNING OUTCOMES

At the end of the course, students will be able to do the following:

- Programming using a basic game engine
- Using mathematics in the implementation of game scenarios
- Integrating and editing game assets (images/sounds/animations)
- Producing a simplified Game Design Document
- Collaborating on a programming project using Source Control
- Delivering a presentation

STATEMENT OF COMPETENCY

00SW Develop gaming or simulation applications

Elements of Competency

1. Analyze the application development project
2. Prepare the computer development environment
3. Generate real or virtual world representations
4. Program the game or simulation logic
5. Produce the documentation

COURSE TOPICS

- Introduction to game world
- Introduction to Greenfoot, classes, methods, data types, sub-/super-classes, method calls, writing code
- Logic structures, math operations, class methods, commenting code, API documentation, random behavior, keyboard controls
- Conditional statements, variables, class constructors, reference variables
- Basics of sound, loops, Arrays, logical operators, strings
- Creating sounds and pictures, how color is created & perceived, mouse input
- Introduction to Game Design Document (GDD)
- Introduction to Version Control Systems
- Simulation Application: imitating some phenomena from real life
- Selected topics in Java and algorithmic thinking to support the final project
- Sharing and collaboration

TEACHING METHODS

Course content will be delivered entirely online and asynchronously. Pre-recorded video segments will be posted on **Léa**.

In addition, there will be weekly synchronous meeting(s) at the scheduled class time on **Léa/Zoom**. Considering that some students might share a computer with family members and might not be available for remote work at specific times, participation is not mandatory. Nevertheless, students are encouraged to participate in those meetings which are closer to the live interaction provided in presential classes.

Synchronous meetings can last up to an hour as long as there are discussions or questions from students. Students can send questions in advance via MIO, and even if the author is not online, the question will be presented (anonymously, if preferred) and answered live.

WEEKLY SCHEDULE

Here is how a typical week will look like:
- Lectures will be posted on **Léa**.
- Labs will be posted on **Léa**.
- The first weekly live meeting (via **Léa/Zoom**) will happen on:
    - Monday @ 13:00 (sect. 00001)
    - Tuesday @ 13:00 (sect. 00002)
- All deliverables for the week will be due on Friday @ 23:59, unless specified otherwise.

REQUIRED TEXTBOOK /EBOOK

Introduction to Programming with Greenfoot: Object-Oriented Programming in Java with Games and Simulations, 2nd Edition.

Author: Michael Kolling

Publisher: Pearson

ISBN-13: 9780134054292

Approximate price*: ~$ 120 CAD*

Web Link: http://www.mypearsonstore.com/bookstore/introduction-to-programming-with-greenfoot-object-oriented-9780134054292?xid=PSED

Ebook: Introduction To Programming With Greenfoot (180 Days)
Item#: 9780134054483

The eBook is available at **Vanier College bookstore** for *$36.00 CAD:*
https://jake.bookware3000.ca/CourseSearch/?course[]=MAIN,A20,420,4201410001,&

SOFTWARE TO USE

Greenfoot will be used to learn the general fundamentals and principles of programming by creating your very own interesting games and simulations.

The following Software will be used and each of them is free to download/install:

1) **Greenfoot** (for game programming)
   https://www.greenfoot.org/download

2) **Gimp** (for image editing)
   https://www.gimp.org/downloads/

3) **Audacity** (for audio editing)
   https://www.audacityteam.org/download/

EVALUATION PROCEDURES AND GRADING SCHEME

Labs:	30 % (all labs have equal weight)
Exam 1:	20 % (~ Week 6)
Exam 2:	20 % (~ Week 12)
Team Project:	30 %

- To pass the course, students must **obtain an average of 60% both overall and on the exams**. If the average of the two exams is below 60%, the final mark for the course will be this average.
- Late submission of Assignments: **10% per day will be deducted from late assignments**. Assignments more than three days late will not be accepted.

- Midterm statement of progress: the college's midterm assessment procedure will be used to provide feedback to the students.

TEAM PROJECT

Teams of 2 or 3 students will design and produce a video game using techniques covered in this course. At the end of the term, each team will deliver a report, give a presentation and demonstrate its final project to the teacher and other students.

The project will be graded on form, content and delivery. Instructions and technical requirements of the game will be provided later through **Léa**.

STUDENT ENGAGEMENT

Each student is free to find time to complete their work within the due deadline. Students are expected to follow the online course at their own pace through **Léa**, where all announcements and course content will be posted. Students can also contact the teacher through **MIO**.

Do not hesitate to contact the teacher for help and suggestions. In case of a personal emergency or difficulties, seeking for help early might be decisive for success throughout your college experience.

TIPS FOR SUCCESSFUL JOURNEY

- Attend regularly online synchronous classes.
- Check regularly posted content (documents, assignments, videos) on **Léa Omnivox**.
- Make notes of any topic you need further clarification, to be asked later via MIO or during live meetings. Do not accumulate questions! Ask for help, and make sure you do not fall behind.
- Follow the weekly schedule and deadlines. Watch your routine and make sure you develop good habits. Avoid procrastination.
- Be fully present in your learning experience. Choose an appropriate space to watch recordings and to connect to live meetings: free of noise and distractions.
- Make sure to be ready for any synchronized meeting a few minutes before. Use this time to test you microphone and camera, mingle with other students and the teacher.
- Mute your mic while not speaking to avoid background noise for the rest of the group.

GENERAL ACADEMIC POLICIES

It is the student's responsibility to be familiar with and adhere to all Vanier College Policies. A summary of the course-level policies that apply in this and all other Vanier courses can be found under Course-Level Policies in Important Vanier Links on Omnivox. Complete policies can be found on the Vanier College website, under Policies. Your attention is drawn in particular to the following policies: policies on academic complaints; cheating and plagiarism; religious holy day absences; student misconduct in the classroom; and, student rights and responsibilities (section 3.1) in IPESA document.

RECORDINGS, PRIVACY AND COPYRIGHT

Notice of video recording and sharing (Download permissible; re-use prohibited)

This course, including your participation, may be recorded on video and made available to students in the course for viewing remotely after each session.

Course videos and materials belong to your teacher and the college and are protected by copyright. In this course, you are permitted to download session videos and materials for your own academic use, but you should not copy, share, or use them for any other purpose without the explicit permission of the teacher. Any contravention of these conditions of use may be subject to sanction(s) by the College under the Code of Conduct.

For questions about recording and use of videos in which you appear please contact your teacher.

Teacher Permits Recordings (No Distribution Rights)

Students may create audio-recordings of class sessions for their personal use. Recordings are intended to permit content review to enhance understanding of the topics presented.

Students should note that since recordings are to be permitted, their participation (voice and/or video) may be recorded by others during the class. Please speak to the teacher if this is a concern for you.

In accordance with Quebec's Act to secure handicapped persons in the exercise of their rights with a view to achieving social, school and workplace integration, 2004, persons who have special needs will be accommodated.

Students agree to the following terms when creating recordings of class sessions:

- Recordings are not to be distributed without the permission of the teacher via the Internet, using social media such as Facebook, peer-to-peer, file sharing such as Google Drive, One Drive or Dropbox, or other distribution channels.
- Recordings are not to be shared with other classmates unless they are to be used in collaborative assignments, or if the teacher permits for other reasons.
- Non-compliance with these terms violates a teacher's intellectual property rights and the Canadian Copyright Act. Any contravention of these conditions of use may be subject to sanction(s) by the College under the Code of Conduct.

TENTATIVE WEEKLY PLAN

(Please see next page)

TENTATIVE WEEKLY PLAN

Week #	Lecture Topics	Lab Activities
1	Course Outline Introductions to Game World	Greenfoot Software Installation
2	Ch. 1: Introduction to Greenfoot, classes, methods, data types	Lab: Getting to know Greenfoot, Stride, Java
3	Ch. 2: More about classes, sub-/super-classes, method calls, writing code	Lab: First program - Little Crab game
4	Ch. 3: Logic structures, math operations, class methods, commenting code, API documentation, random behavior, keyboard controls	Lab: Improving the Little Crab game
5	Ch. 4: Conditional statements, variables, class constructors, reference variables	Lab: Finishing the Little Crab game Review for Exam #1
6	**Exam #1**	Exam correction Team project instructions
7	Ch. 6 - part I: Loops Game Design Document (GDD)	Lab (Loops)
8	Ch. 6 - part II: Arrays, logical operators, strings	Lab (Arrays) Game Proposal due
9	Ch. 10 (part I) Editing pictures Graphic modes (Victor, Bitmap)	Gimp Software Installation Lab (Gimp)
10	Ch. 10 (part II) Creating and editing sounds	Audacity Software Installation Lab (Audacity)
11	Git and Github	Create **Github** user account Configure **Git** to access Github Review for Exam #2
12	**Exam #2**	Exam correction GDD due
13	Ch. 11: Simulation Application: imitating some phenomena from real life	Work on course project
14	Selected topics in Java and algorithmic thinking to support the final project	Work on course project
15	Course Project Presentation	