Syllabus for Programming II
2016-17

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Course Objectives:

By the end of this course, students will improve their programming skills and C++ fluency, learn how to use the Simple Directmedia Layer (SDL2) media library, and acquire skills to effectively apply the C++ Standard Template Library (STL).

Grading:

As this class is an Independent Study Seminar, grading will be Pass/Fail. Passing requires only class participation and the production of a reasonable quality project.

Course Format & Website:

The class format will be a little different than last year's course. Most weeks will consist of approximately an hour of learning new concepts and discussing examples and an hour of project work. Individual projects can span the entire semester or only a few weeks, depending on the student.

Notes and materials will be available on the class website, which will be linked to in Blackboard. The website also contains last year's materials for reference.

For other classroom policies, including grades, academic integrity, and classroom behavior, please see the "Syllabus Addendum for Core DA Classes" which is posted on Blackboard.

Tentative Schedule:

Semester 1 – SDL2:

Week	Topics
1	Review, Setup & Windowing
2	Bitmaps
3	Events
4	Geometry Rendering
5	Textures
6	Sound & Extension Libraries
7	Text Rendering & Input

8	Timing: Frame Rate, Physics, Animation
9	Game Design Patterns
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11	Project Work
12	Project Work
13	Project Work/Showcase

Semester 2 – Data Structures & the STL:

Week	Topics
1	Time & Space Complexity | Sorting Algorithms
2	Stacks, Queues, & Lists | Vectors, Array, Queue, Stack
3	Trees, Heaps, Priority Queue | Priority Queue, Heap
4	Binary Search Trees & Balanced Trees
5	Dictionaries & Hash maps | Map, Multimap, Unordered Map
6	Graphs & Graph Operations
7	Threading
8	Smart Pointers & Move Semantics
9	Functional Programming
10	Exceptions
11	Creating Libraries
12	Scripting
13	Project Work
14	Project Work
15	Project Work/Showcase